

History of the
ROBERT BRECK BRIGHAM HOSPITAL
FOR INCURABLES

The first teaching hospital in America specializing
in rheumatic and orthopedic conditions



By Matthew H. Liang

With
Nancy Anderson Robertson
Ann Conway
Victoria Gall
Jane Corrigan Wandel

ROBERT B. BRIGHAM
HOSPITAL



ERECTED BY
ROBERT B. BRIGHAM
AND
ELIZABETH F. BRIGHAM
A.D. MDCCCCXIII



A BROTHER AND SISTER
WHO GAVE THEIR FORTUNES
FOR THE RELIEF OF SUFFERING



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~ Dedication ~

To my family, my parents – Alice Kao and Ping Yee, and the family at
the old Robert, with particular gratitude to Ronald J. Anderson

Matt Liang

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*These patients, physically wasted, isolated from their kind,
financially depleted, who are admitted to the Robert B. Brigham
Hospital, enter at once upon an atmosphere of hope...*

Robert B. Brigham Hospital, 1928

INTRODUCTION

History of the Project

This story is an account of the Robert Breck Brigham Hospital in Boston – a small hospital specializing in the treatment of rheumatic and orthopedic conditions, which operated from 1914 until 1980 when it became part of a merger that created the current Brigham and Women’s Hospital (BWH). In the confusion of moving a functioning hospital down the hill to the new Brigham and Women’s tower, I became a point of contact for nurses, therapists, and others who had worked in the old hospital and who had memorabilia of the “old Robert.” These included framed pictures, books from its library, papers, photographs, crutches, glass lantern slides, and other materials. The word soon got out that we were intent on preserving an historical record of “The Robert.” John Thorndike (whose father, the orthopedic surgeon Augustus Thorndike, Jr., had helped funnel resources to the Robert Breck Brigham in the mid-twentieth century as its reputation grew), heard of our work and brought materials that survived a flood in his basement.

The emerging collection came under the care of the BWH Medical Library after the merger. Since 2004, all of the hospital’s historic archives have been managed at the Center for the History of Medicine at Harvard Medical School’s Francis A. Countway Library of Medicine, where materials are catalogued and preserved for posterity.

Meanwhile, the idea of a book had emerged. A number of people contributed along the way. Margaret (Warner) Humphreys, a Brigham and Women’s medical resident with a Harvard PhD in the History of Science – now the Josiah Charles Trent Professor in the History of Medicine at Duke University and Editor of the *Journal of the*

History of Medicine and Allied Sciences – worked on the project during her house staff days and presented a paper at the American Association for the History of Medicine relating the Robert Brigham to other forces in the history of chronic disease hospitals in America at the turn of the twentieth century. Nancy (Anderson) Robertson, then a Williams College student, assembled documents and recorded oral histories from people who worked at the hospital (The Robert Breck Brigham Oral History Project), including her father, Ronald Anderson, a rheumatologist (see Chapter 10). (Some of the oral histories are used as sidebars in this book; we regret that attributions for many of the quotes were lost.) In 1989, Ann Conway, a former archivist for the Brigham and Women's, wrote a 96-page draft using these oral histories, annual reports, and other materials. The project stayed there until 2005 when the co-chairs of the BWH Archives Committee – Ramon Martin, staff anesthesiologist, and Anne Fladger, Brigham's indefatigable librarian – approached us to complete the work. Victoria Gall, a physical therapist who started working at the Robert Brigham in 1973, and a history buff and photographer, rescued additional old oil portraits, photographs, and materials around the hospital and researched the orthopedic and rehabilitation staff. She poured over our own collection and those in the Countway Library archives to select pictures. Along the way, we survived losing the manuscript in cyberspace. An extensively revised and expanded draft emerged early in 2008, which then underwent additional editing and fact checking.

A village of people helped and we are very grateful to them for their generosity. In particular, we thank Frank Austen, Clement Sledge, Fred Ewald, Robert Poss, Dick Scott, Tom Thornhill, Ed Nalebuff, Barry Simmons, Art Boland, Ron Anderson, Peter Schur, John David, Ralph Schumacher, Neal Roberts, Bing Chang, Mac Rogers, Barbara Weissman, Phil DiMattia, Deh-Ming Chang, Jerry Greene, Mercedes Concepcion, Mary Scamman, Janice McInnes, Brigham and Women's archivist Catherine Marie Pate, and Ann Marie Menting, the editor of *Harvard Medicine*. We were also fortunate to be able to interview Bill Thomas, Jeannie Smith, Marie Weafer, Arthur Hall, and Leland Sosman before they passed away. Anne Fladger provided access to many sources at the

Brigham and was the project's main cheerleader. Barclay Adams, Stuart Mushlin, and Joel T. Katz, my doctors, saved me three times and kept me healthy and out of the hospital during this time. Jane Corrigan Wandel did the heavy lifting these last five years, ensuring that every date and fact that could be checked was. It was her meticulous work that unveiled a discrepancy in the oft-quoted date for the hospital's opening. Her nursing background and sensitivities were critical.

Over the years, we were supported by the Brigham and Women's Hospital Archives Committee, the Friends of Brigham and Women's Hospital, National Institutes of Health grants, a Kirkland Scholar Award, Rheuminations, Inc., the Molson Family Foundation, the Arthritis Foundation, and the Massachusetts Veterans Epidemiology Research and Information Center.

The main focus of this account covers the opening of the hospital in 1914 to 1980 when the hospital moved down Parker Hill into the new merged facility, but I have fast-forwarded to the present in many instances. I am not a medical historian, but I felt it would be misleading to just stop the narrative in 1980. Doing so would give an incomplete picture of the real importance of the Robert Brigham and its staff in the modern diagnosis and care of persons with arthritis and related disorders. Its legacy continues today at the Brigham and Women's Hospital and, indeed, across the globe where its many trainees have dispersed.

It is awkward and difficult, maybe impossible, to write objectively about people who are still colleagues, friends, or bosses, or about oneself or work that is still happening. As a doctor, I love the narratives of people who worked at the place – some of which I had never known before launching this project. I once met the American painter, John Currin, at Boston's Museum of Fine Arts, and I asked him how he knew when he had finished with a painting. He thought a bit and replied, "When I start using a small brush." I found it difficult to get to the small brush with this project. On the contrary, I found that the urge to add more detail and context to the unfolding story of the hospital and its people was irresistible. The myriad connections and sidebars were, to me, integral to the story. For weaknesses in objectivity and brevity, I apologize.

Matthew H. Liang, MD, MPH, FACP, FACR

Notes to the reader:

~ The records of the hospital, now archived at the Francis A. Countway Library of Medicine in Boston, provided invaluable source material for this book. They are specifically cited only when direct quotes from a particular document are used.

~ The diseases encompassed by the specialty of rheumatology, clinical immunology, allergy, and orthopedics include over 100 specific entities, each with their own cause, treatment, clinical course, and outcomes. In this book, they are referred to variously as systemic rheumatic diseases, rheumatic diseases, rheumatic disorders, rheumatism, musculoskeletal conditions, musculoskeletal disorders, arthritis, and arthritic conditions. This reflects both popular labels, changing nomenclature in the field, and personal preferences. We have succumbed to this inconsistency, not being able to resolve popular usage.

~ Referring to patients as “arthritis” or “cripples” has, fortunately, gone out of favor, and we only do so in context and in quotations to indicate our distaste.

~ Orthopedic is standard American spelling. “Orthopaedic” is used in certain instances to be faithful to the original usage by an organization or publication; they are the same.

~ Although we have tried to define diseases in lay terms, the scientific terms will be inscrutable to many; neither lay nor professional would be happy and we apologize.

~ We have included birth and death dates of individuals we mention whenever possible, but not formal degrees or “Dr.” unless it might be unclear. In cases where we had a birth or death date that could not be verified, the notation ? appears, as in (1919? - 2004).

~ Finally we intentionally chose to vary how we refer to our beloved hospital, using many of the terms that it was known by, including, in addition to its full formal name, the Robert, Robert Breck Brigham, Robert B. Brigham, Robert Brigham, and RBBH.

Beginnings of a New Hospital

High on Boston's Mission Hill stands the old Robert Breck Brigham Hospital, as elegant today as when it was built in the early years of the twentieth century. Its graceful neoclassical façade is little changed. A sweeping set of stairs leads up to the broad portico. Sun porches connect both wings. As one stands on its front steps, now part of the New England Baptist Hospital, a panorama of Boston can be seen below. The twin spires of Mission Church rise on Tremont Street, the Longwood Medical Area lies beyond. In its midst stand the modern towers of the Brigham and Women's Hospital, where the legacy of the Robert Breck Brigham Hospital – the first American teaching hospital devoted exclusively to the care of arthritis and rheumatic disease – continues today.

The story of the Robert Breck Brigham Hospital is the story of an elderly man, a loner, who was influenced by the philanthropic impulses of his day. It is the story of a Boston neighborhood whose tumultuous history parallels that of the larger city. It is the story of changes in the role of the modern hospital, and of the development of models of care for an overlooked population. It is the story of the many dedicated individuals who worked at the hospital and of the patients they cared for. Finally it is the story of the coming of age of molecular medicine and rheumatology, the drive toward understanding how diseases occur, and the beginnings of contemporary joint arthroplasty surgery.

In the beginning, no one could have foreseen or even considered the enormous changes that would occur in the world, the city, or the hospital itself, or that some diseases considered incurable and inextinguishable would be dramatically and effectively treated a half century later.

The Brigham family

The tale of the RBBH begins in 1842. Pastures covered Parker Hill, where the hospital that was to bear Robert Brigham's name would one day be built. In another section of Boston, 16-year-old Robert Breck Brigham (1826-1900) walked into the establishment of his uncle – a hotelier, restaurateur, and real estate investor – and got a job as an oyster shucker (Roboff 1976; Bayles 1964). Ten years later, Robert would establish a restaurant of his own, then another after the first's failure. It would be in the latter – “Brigham's Oyster Saloon” – that he would start to build his fortune. Noted one account, “The restaurant became famous for its lemon pies as well as its oysters. It was also the first restaurant (in Boston) to serve liquor with meals at the tables instead of at the bar. Brigham's competitors declared, and his friends admitted, that he had an eye for business – to the extent that he had discovered ‘how to cut a pie into five quarters’” (Bayles 1964).

Early twentieth-century Boston saw the establishment of two hospitals bearing the Brigham name – The Peter Bent Brigham Hospital and the Robert Breck Brigham Hospital – and there are interesting similarities in the lives of the men for whom these institutions were named.



Robert Breck Brigham and Elizabeth Fay Brigham

Peter Bent Brigham (1807-1877) and Robert Breck Brigham were born in Bakersfield, Vermont, descendants of Thomas Brigham, who had settled in Massachusetts in the 1600s. Peter, an émigré to Boston (like nephew, Robert), began his entrepreneurial life by selling fish and oysters from a wheelbarrow. He would enjoy success as a restaurateur and landowner, live penuriously with a female relative, and earmark his sizeable estate for the establishment of a hospital. The hospital, designed to serve the indigent poor of Suffolk County, was the Peter Bent Brigham Hospital and opened in 1913. Like the Robert, it too would become part of the modern-day Brigham and Women's Hospital.

Robert Breck Brigham, like Peter, lived simply. He spent his time in a small room over his restaurant in an era in which wealth was often lavishly displayed. His social life was modest: he rarely travelled, was not interested in sports, and was not a member of any church or club. According to one historical account, "His only foray into public life was to build the Hollis Street Theater, at which he maintained a private box" (Bayles 1964). Robert's sister, Elizabeth Fay Brigham (1824-1909), who was to become an important benefactor of the hospital bearing her brother's name, came to live with him after he left an unhappy marriage with a young cousin.

Robert Brigham's holdings expanded beyond the original restaurant. "Brigham's Hotel" was added around 1882. Its location was a historical site. In 1636, Garrett Bourne had built a house there and planted an elm tree. Later, the house became the meeting place of the Sons of Liberty. The first public act of resistance to British authority occurred there in 1765 when the effigy of a British Stamp Officer was hung from the elm, which came to be known as the Liberty Tree. The site is marked in present day Boston by a plaque on a Department of Motor Vehicles building at the corner of Washington and Essex Streets. When Robert Brigham was sixty-five, he sold the Brigham's Oyster Saloon, but he and his sister both continued to live over the restaurant and saved their money (Bayles 1964).

While the foundation of his fortune was in the restaurant and hotel business, the bulk of Robert Brigham's fortune was in real estate – property valued at around three million dollars and all within a mile

of his home. Robert Brigham asked his lawyer, Halsey J. Boardman, for advice about disposing his estate after his death, and one account has it that Boardman asked his daughter, an Associated Charities volunteer visitor, for suggestions. Having found it difficult to find proper places for the care of “incurable” patients, she recommended that Mr. Brigham build them a hospital (Bayles 1964).

Robert Breck Brigham died on January 2, 1900, at age 73. His will included bequests to relatives and friends and provisions for yearly annuities payable to numerous charitable institutions. It directed that the balance of the net income from the estate be set aside for the erection, equipment, and maintenance of a hospital “for the care and support and medical and surgical treatment of those citizens of Boston who are without necessary means of support, and incapable of obtaining a comfortable livelihood by reason of chronic or incurable disease or permanent physical disability” (The Commonwealth of Massachusetts 1903).

The Robert Breck Brigham Hospital for Incurables was formally chartered by the Commonwealth of Massachusetts on February 11, 1903, after the purchase of a ten acre site on top of Parker Hill. The first president of the hospital corporation was John Shepard, a local merchant (Robert B Brigham Hospital 1964); Louis M. Spear was ap-



John Shepard, president of the Robert Breck Brigham Hospital Corporation from 1903 to 1914

pointed the first physician-in-chief in 1904 (Bayles 1964). According to hospital records, Elizabeth Fay Brigham was a member of the hospital corporation until her death in 1909, and “spent her last years devoting herself to the support of her brother’s favorite charity” (Robert B Brigham Hospital 1964). Her will directed that \$1.5 million of her estate be given to the RBBH. She noted, “In making this disposition of my estate, I take into consideration the fact that the greater part of my property was given me by my late brother, Robert B. Brigham, and I consider it my duty to leave the same for the uses and

purposes of the Hospital established under his will” (Legal Proceedings and Investigation Records 1924–1954). The hospital building was not actually completed until 1914 when the accumulated funds were sufficient. A tablet bearing the names of both Robert Breck and Elizabeth Fay Brigham and portraits of each were put on display to acknowledge their roles in the establishment of the hospital. (A trust fund bearing the name of Elizabeth F. Brigham was still in existence in 2013, with the Brigham and Women’s Hospital as its beneficiary.)

Mission Hill

The Robert Breck Brigham Hospital for Incurables opened on April 1, 1914. It stood atop Parker Hill – once an enclave for prosperous settlers who sought to both escape the urban congestion of Boston and to partake of the unique view of the city and surrounding countryside that the hill offered. In the neighborhood’s early days, children played in three fields known as the cow field, the sleigh field, and the daisy field. The hill was on the northern tip of the village of Roxbury, which had become part of Boston in the mid-1860s. The neighborhood became known as Mission Hill in the 1920s, when athletic teams from the neighborhood’s



A view of Boston in 1878 as seen from Parker Hill, later to be the site of the Robert B. Brigham Hospital

so-called Mission Church (now called The Basilica of Our Lady of Perpetual Help) spread the name throughout the city (Roboff 1976).

The neighborhood was a microcosm of the changes that occurred in Boston in the decades surrounding the turn of the twentieth century. Until the mid-1800s, Boston had been an insular community, proud of its revolutionary heritage and its great port. Waves of immigrants – first Irish, and later Southern and Eastern European – changed its character socially, politically, economically, and even geographically as the city's tidal areas were gradually filled to accommodate the immigrant masses.

The Parker Hill population grew in the 1860s when German families settled at the base of the hill and built the first of many breweries there. At the time, several estates dotted the hill's slopes, but it retained its rural flavor. Toward the end of the decade, street railway service and sewage systems were extended to Roxbury. Working-class Irish families soon moved into undeveloped areas like Parker Hill (Roboff 1976).

The center of the closely-knit Irish community that would develop was the Mission Church. In 1869, the Catholic Redemptorist Fathers acquired the Brinley Farm, which included five acres of land along Tremont Street. Two years later, they opened the church there and a shrine dedicated to Our Lady of Perpetual Help. Throngs filled the church from its inception, reflecting the rapid growth of the Irish population during this period. A large stone church that could accommodate more people replaced the original in 1878. Soon after, a school was built (Roboff 1976).

In the last years of the nineteenth century, a homogeneous Irish Catholic community filled the myriad wood-frame tenements that arose in the area. One historical account described the changes that took place on Mission Hill in the years leading up to the construction of the RBBH:

Triple-decker houses had been built about three-quarters of the way up Parker Hill to Hillside Street, and as far west as Wait Street. Above Hillside Street were a cow farm and pasture, a reservoir, and a small building which since 1893 had housed the New England Baptist Hospital. There were

some houses on Wait Street and a few more on the far end of the Hill near Parker Hill Avenue, but in between was Gray's Field, an orchard filled with pear trees and apple trees, which ran all the way from Hillside Street to Huntington Avenue... Across Huntington Avenue were open fields where the circus kept its horses when it came to Boston each year. Most of the streets throughout the neighborhood were unpaved. Sidewalks, where they existed, were made of two two-by-ten foot wooden planks, which protected pedestrians from mud and manure...After 1910, the fields on the Hill gradually disappeared in the wake of another building boom, during which new houses and more hospitals were constructed. The Huntington Estate and Gray's Field were covered with more tightly-packed three-deckers. A tuberculosis hospital was built adjacent to the reservoir on top of the Hill in 1908... [Later] the reservoir was drained and the construction of the Robert Breck Brigham Hospital started. (Roboff 1976, 2-4)

In the beginning, both the neighborhood and the hospital were isolated – partly because of geography, and partly because of the many marginalized immigrants – which fostered a strong sense of community. Many neighborhood residents worked at the RBBH, and it functioned for a time as a community hospital. In ensuing years, both the neighborhood and the hospital would undergo transformative changes that would alter the area's insular quality.

Hospitals in the nineteenth century

The Robert Breck Brigham Hospital opened in an era of major changes in American life. Technological progress, urbanization, immigration, compulsory education, and changes in the nature of the family were all components of this transformation. The manner in which health care was delivered and the nature of hospitals were not unaffected.

In America and in Europe, the pre-twentieth-century hospital was little more than a dumping ground for society's unwanted. Hospitals of the period carried a stigma related to their origins as almshouses or pest houses. Indeed, before the development of modern therapeutics and surgery, there was little reason for the average patient to be treat-

ed anywhere but at home. Because of the lack of antiseptic and aseptic techniques, infections could spread quickly in hospitals. In fact, sepsis – or infection – was sometimes called “hospitalism” (Vogel 1980, 9). Post-operative death rates were high. Hospitals were often financially unstable.

The stigma of hospitals extended to smaller hospitals as well. Along with large private institutions like the Massachusetts General Hospital and public ones like Boston City Hospital, virtually any physician could open a private hospital and many did, particularly for their surgical cases. Short-lived, ill-equipped, and marginal entities such as the Pirlot Private Hospital, the F.A. Reinhard Hospital, the Laing Dispensary, and Dr. Phillips’ Private Hospital all existed in Victorian Boston (Vogel 1980).

In New York City, the oldest orthopedic specialty hospital in America had its start. The Hospital for the Relief of the Ruptured and Crippled, later known as the Hospital for Special Surgery, was founded in 1863 with the support of Robert M. Hartley of the New York Society for the Relief of the Ruptured and Crippled and James A. Knight, a general practitioner from Maryland who was its first surgeon-in-chief. At the time, New York was a city of 800,000 whose population included both the very rich and the very poor. Like the RBBH, the hospital was established for the poor with “crippling” conditions. In the midst of the Civil War, the hospital took in its first patients in Knight’s home on 2nd Avenue and 6th Street and treated 824 patients in its first year. A larger hospital was built in 1870 on 42nd Street and Lexington Avenue, with the help of money raised by prominent New Yorkers, led by John C. Green. Knight believed in the healing powers of sunshine, fresh air, diet, and exercise, but also used electrical stimulation and a form of gentle rehabilitation called “expectant treatment.” Surgical infection was a serious problem and few operations were done during Knight’s tenure as surgeon-in-chief (Hospital for Special Surgery 2011).

Until the end of the nineteenth century, hospitals existed primarily as charitable institutions and their mission was in part a moral one. Hospitals imposed a strict order on their inhabitants, sometimes to the extent of erecting walls around the property and requiring “in-



A photograph of the main entrance of the hospital, dated July 8, 1916

mates” to carry passes. One of the common complaints of hospital administrators at the time was the failure of patients to adhere to the hospital routine. The “donor class” of that time – national and international philanthropists such as Carnegie and Rockefeller as well as the Brigham family in Boston – acted out of concern born of a social position that ascribed to certain beliefs and moral conventions. Similarly, in specifying that hospital patients were to be “without necessary means of support” (at the RBBH) and the “indigent poor of Suffolk County” (at the Peter Bent Brigham), hospital patrons were reflecting the needs and sentiments of their time (Vogel 1980).

All these factors – social and demographic changes, the nature of philanthropy and of medicine, and the role of hospitals – affected the development of the RBBH.

Bridging two eras

In a sense, the new Robert Breck Brigham Hospital was poised between the nineteenth century hospital world and that which was emerging in the twentieth. While not expressly seen as a “scientific hospital” like the Peter Bent Brigham down the hill, it was nevertheless staffed by physicians who were the medical elite of the day. Almost invariably of the



Trained in a more scientific manner than physicians of the past, physicians at the RBBH would espouse specialized care.

same social origins as the “donor class” (in which, ironically, the Vermont-bred, socially-isolated Brighams were anomalies), these were practitioners who prided themselves on their Ivy League and European educations. Henry Bigelow (1818-1890) of the Massachusetts General Hospital had stated in 1871 that the medical profession was increasingly becoming divided into two classes, “those who simply practiced medicine...[and] those who contributed to its development” (Vogel 1980, 17).

The Robert would be staffed by the latter. Trained in a more scientific manner than physicians of the past, physicians at the RBBH would espouse specialized care. Not long after its founding, the hospital came to focus on rheumatic disease. Interestingly, specialization, which was becoming widespread in American hospitals, would cause repeated financial crises as the shift from custodial to scientific and technology-intensive care drove costs up and outstripped the ability of donors to provide sufficient support.

In some ways, the RBBH began its life as a paradox. Even as it existed and came to prosper in the fast-paced world of Boston academic medicine, it provided care to those for whom clinical progress was slow or failing. In addition, from its inception, the hospital provided care that was both modern and old-fashioned. Symbolic of this dichotomy were Drs. Alfred Worcester and Richard C. Cabot, who were both members of the advisory board of the RBBH. As a house officer at the Boston Lying-in Hospital, Worcester had established a reputation by his use of antiseptic technique – washing his hands with bichloride of mercury – against the advice of his superiors. Thus, Worcester could be said to represent “modern medicine.” Cabot, on the other hand, represented both the old and the new. A Harvard professor and staff member at the Massachusetts General Hospital, he was perhaps the most outspoken of a group of socially-oriented physicians of the time (Rosenberg 1987). They decried the growing rationality and technical orientation of medicine, reminding physicians that the patient was, in addition to his symptoms, a member

of a family and society. In a 1908 edition of the *St. Paul Medical Journal* (volume 10), Cabot wrote, “Beyond the special disease of a special child or adult who comes to us in the dispensary, stands a family problem, ultimately a community problem, poverty, bad housing, bad food, bad habits and associations, ignorance of the ways and means of making a clean and healthy life on scanty means” (quoted in Rosenberg 1987, 313).

The physicians at the RBBH would have an opportunity to practice in a new institution unique in its field, and to care for patients in a pastoral, orderly setting, removed from the hubbub of Boston. They would espouse both the art and the science of medicine. And while the earliest RBBH physicians, like their counterparts in subsequent decades, were pioneers pursuing the scientific understanding of arthritis and rheumatic diseases, they used the therapeutic interventions of the day, which had limited or unproven efficacy. Much of what was prescribed involved adjusting or manipulating the patient’s environment. The physicians of RBBH’s earliest years lacked the tools to cure systemic rheumatic conditions, but they could try to help the patient function. They did this by understanding each patient’s social situation, helping patients to adjust or revise choices and expectations in light of the conditions in which they lived. Using a contemporary term, the care at the Robert Breck Brigham Hospital was, in many ways, patient- and family-oriented.

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CHAPTER 2

Joel E. Goldthwait's Vision of Patient-Centered Care and the Hospital's Early Years

At the entrance to the Robert Breck Brigham Hospital there are two bronze tablets [see inside covers of this book]. On one of them are the names of the benefactors, Robert Breck Brigham and his sister, Elizabeth Fay Brigham. On the other are excerpts from the will stating that the hospital was for the study and treatment of those people who were suffering from chronic disease. The interesting part of this excerpt is that the hospital was for the study and treatment of people, and not primarily for the study of their diseases.

Dr. Lloyd Brown, who penned these lines in a 1954 correspondence, was perceptive in his commentary that the concept of the patient – which includes each patient's social and familial context – was paramount at the Robert Breck Brigham Hospital, even in its earliest days. In part, this was due to a strong ethos of the time. In *The Care of Strangers: The Rise of the American Hospital System*, Charles Rosenberg (1987) noted that early twentieth-century hospital leaders were increasingly aware of the need to keep hospital care humane, partly due to growing criticism that such was not the case. Rosenberg notes that hospital executives “feared the emergence of a hospital that would, as one such critic put it, become a ‘great machine,’ reducing to cogs those unfortunate enough to find themselves within it” (Rosenberg 1987, 311). At the RBBH, measures would be taken to prevent this occurrence. The impetus for these measures came directly from the man largely responsible for the fledgling philosophy and goals of the institution – the orthopedic surgeon, Joel E. Goldthwait (1866-1961).

Joel E. Goldthwait

Goldthwait, remembered as a “very dignified, regal man” and “a dynamo” (Stillman circa 1966), is a remarkable figure in the history of both orthopedic surgery and several Boston hospitals. His approach to treating arthritis was far ahead of his time, including his insistence on seeing the patient as much more than a collection of symptoms. Goldth-



Dr. Joel E. Goldthwait

wait's remarkable personality and that of the RBBH became virtually synonymous as he guided the institution's course for well over a generation.

Goldthwait was born in Marblehead, Massachusetts in 1866 and attended the Massachusetts Agricultural College, planning on a career in the science of agriculture. While there, he was influenced greatly by Charles Bull, a professor of botany who was also the students' physician. Goldthwait spent time assisting Bull, which sparked his interest in medicine. Following his graduation from the agricultural school, after a brief period in business, Goldth-

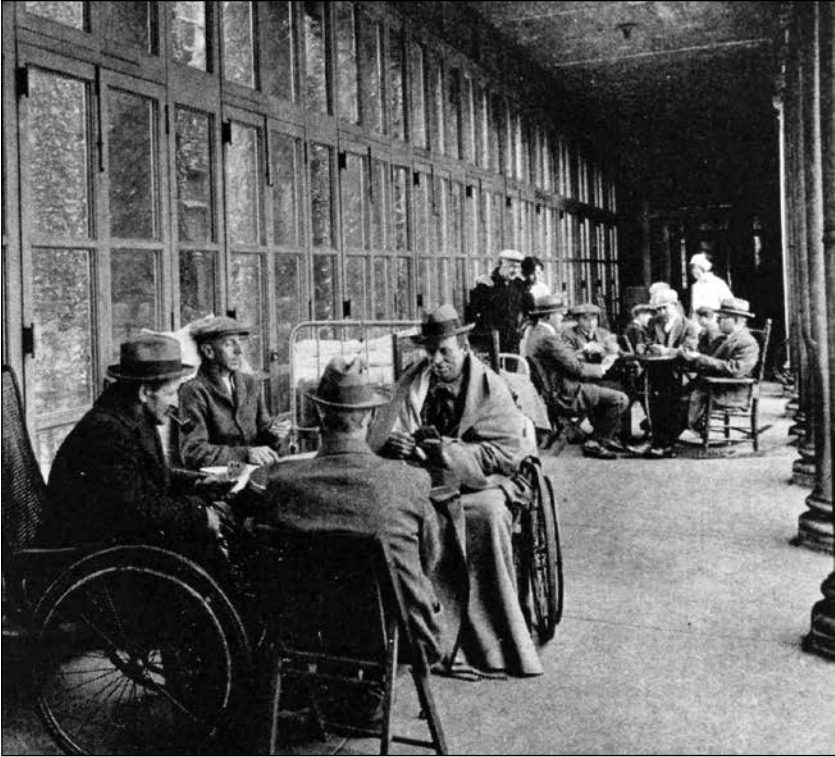
wait entered Harvard Medical School, graduating in 1890. He did an internship at Children's Hospital Boston, where orthopedic services had been established, and at Boston City Hospital. There he was influenced by Edward H. Bradford (1848-1926), a preeminent orthopedic surgeon in Boston and one of the co-founders of the first private, free day school in America devoted to children with physical disabilities, now known as the Cotting School. Goldthwait was also influenced by several years

of study and observation in northern Italy, where significant advances had been made in orthopedic surgery (Smyth, Freyberg, and McEwen 1985). At the time, it was widely held in Europe that chronic deforming arthritis might be tubercular in origin. Goldthwait was interested in other etiologies and, on his return to Boston in 1909, studied calcium metabolism in a basement laboratory at the Massachusetts General Hospital (MGH). He became a staff physician at both Children's Hospital Boston and the neighboring House of the Good Samaritan, which had opened the first children's orthopedic ward in the United States in 1864, and which was later to specialize in the treatment of rheumatic fever (Obituary 1961).

At the turn of the century, no hospital in Boston had facilities for the care of the so-called "crippled" and "disabled" after the age of twelve. Goldthwait's concern for the continued care of these patients finally convinced leaders at the Carney Hospital in Dorchester to give him the use of a third floor room where he started the first clinic for "crippled" adults in America. Many of the patients seen in this clinic improved to the point where they returned to useful lives.

When Goldthwait's work became known, the Massachusetts legislature voted \$10,000 to support a clinic for the care of the adult "cripple." In 1899, Goldthwait organized and directed MGH's first orthopedic outpatient service, and in 1909 he raised \$75,000 to establish an orthopedic ward at the hospital. He and Maurice Richardson, a surgeon at the MGH, opened the Corey Hill Hospital for the care of their private patients – a common practice among physicians of the period. (The hospital closed in the late 1920s.)

Goldthwait became one of the original trustees of the Robert Breck Brigham Hospital Corporation – a group charged with the management of the hospital, which formed before the construction of the actual hospital building began. The trustees were progressive individuals like Goldthwait and included businessmen and personal friends of Robert Brigham. Goldthwait became president of the corporation in the early years of the hospital's existence.



The bridge between the main hospital and the patient wards was bathed in sunshine and was a popular gathering place for patients.

Goldthwait was an important pioneer in the study and treatment of rheumatic and musculoskeletal conditions. In 1897, he was the first to describe and differentiate rheumatoid arthritis from osteoarthritis. In the article, “The treatment of disabled joints resulting from the so-called rheumatoid diseases,” he classified rheumatoid arthritis and osteoarthritis and illustrated them with photographs and x-rays (Goldthwait 1897). He demonstrated movement of the sacro-iliac joint and showed that it was a true articulation. (Previously, it had been thought to be an immovable joint, or synarthrosis.) Along with RBBH surgeons Lloyd Brown, Loring Swaim, and John Kuhns, Goldthwait authored the text, *Essentials of Body Mechanics in Health and Disease*, that would go through five editions (Goldthwait et al. 1952). Goldthwait developed new operations – one to treat recurrent dislocation of the patella and another for fusing

the ankle. He was a founder of the American College of Surgeons and the American Academy of Orthopaedic Surgeons. He received the Distinguished Service Medal after World War I, and was made a Companion of the Order of St. Michael and St. George by the British government. (See Chapter 3 for more on Goldthwait's war record.)

Goldthwait was involved with charities as well. This included the Grenfell Mission started by his patient and friend, Sir Wilfred Grenfell, which provided essential medical services along the Canadian Maritime coastal communities up to the Arctic Circle. Goldthwait donated money to a hospital ship, and helped persuade physicians and nurses from Boston to donate time to support the ship's mission. He donated the money for an agricultural building at Berea College and for the development of a park in the woodlands of Medfield, Massachusetts.

Early twentieth-century care of arthritis

Goldthwait began his oversight of the RBBH during years when the disabled and chronically ill in Boston, and indeed throughout the country, had little attention paid to them, and could be offered little in the way of effective treatment. If the unfortunate "arthritic" was hospitalized in a general hospital, he or she would likely be transferred to a chronic disease hospital, where conditions and treatment methods would be deplorable. While some forms of arthritis had been described as early as Hippocrates' time, few of the major systemic rheumatic diseases had been differentiated; ideas about their mechanisms were speculative and their treatment, at best, was primitive, marginally effective, or unproven. The history of arthritis treatment included bloodletting, purging, gimmickry, and acupuncture (Smyth, Freyberg, and McEwen 1985).

A theory that arthritis was caused by infection had been proposed by Dr. Benjamin Rush in 1805, and the theory was revived and expanded by Dr. Frank Billings in the early 1900s. Billings believed that so-called "focal" infections in areas such as the teeth, tonsils, gall bladder, and other organs were responsible for a myriad of diseases, including some forms of arthritis. His ideas dominated medical thinking until the 1930s (Smyth, Freyberg, and McEwen 1985). Today, infection is still pursued as an etiology of systemic rheumatic conditions like rheuma-



Two patients enjoy a game of checkers at the Robert Breck Brigham.

toid arthritis, systemic lupus erythematosus, polymyositis, and some forms of vasculitis. Indeed, the description of Lyme disease and Lyme arthritis in North America, and the characterization of its causative agent, *B. burgdorferi*, gave the venerable theory new life.

A corollary to the infection theory was that arthritis could be treated by vaccines prepared from bacteria grown from the suspected foci. In some settings, vaccines grown from bacteria isolated from individual patients were given back to the patient as a treatment (autogenous vaccines), while autologous, or stock vaccines, were also prepared. The latter were used at the RBBH, as was colonic irrigation, which was purported to rid the body of toxic substances (Smyth, Freyberg, and McEwen 1985). A variety of additional therapies, some still in use today, were applied during the early twentieth century, including hydrotherapy, massage, rest, and nutritional therapy.

Breaking new ground

Against the backdrop of early twentieth-century medical care – in which rheumatology was not yet a recognized specialty, a disease taxonomy of arthritis was still evolving, and research about arthritis and

related conditions was virtually nonexistent – Dr. Goldthwait led the Robert Breck Brigham Hospital in breaking new ground. Even the more sophisticated practitioners in Boston did not know how to treat arthritis medically, and they often disdained the “quackery” associated with its treatment. To combat stereotypes and to provide the best treatment possible, Goldthwait pioneered a multidisciplinary treatment model at the RBBH to help patients become self-sufficient. The hospital had not only top surgeons and medical physicians, but also a social service department, which screened patients at admission and carefully followed them after discharge, and the first hospital-based “industrial” or occupational therapy (OT) department in the country, which provided patients with therapy and vocational training. Soon after the hospital’s opening, diagnostic laboratory services, neurology, radiology, and oral surgery were available either in house or via consulting staff, many from the nearby Peter Bent Brigham Hospital. As was common at the time, a trained nurse, Mary Thrasher, was appointed superintendent/administrator. Goldthwait was assisted in the early years by a number of prominent individuals, including Augustus Hemenway, Charles H. Olmstead, James S. Conant, and Francis H. Manning, who were on the board of directors and executive committee.

The primary emphasis of the hospital in its early years was orthopedic surgery, and orthopedists had primary responsibility for patient care. The work built on the foundations set forth by earlier pioneers in the field, including John Ball Brown (1784-1862) and Buckminster Brown (1819-1891). In addition to Goldthwait, the physician staff included Philip Wilson, Sr., who subsequently became head of the Hospital for Special Surgery in New York City, and John Kuhns, Charles Painter, Robert Osgood, and Loring Swaim (Smyth, Freyberg, and McEwen 1985).



Dr. Francis C. Hall



In a 1964 photo, taken at the Robert Brigham's 50th Anniversary Celebration, hospital president, Howard Gambrill Jr. (right), shakes hands with Dr. Louis M. Spear, the hospital's first physician-in-chief.

Dr. Spear, the internist physician-in-chief, would soon be joined by a number of other internists who were interested in arthritis. (Board certification in rheumatology would not be started until 1972.) Francis C. Hall joined the staff in 1925, followed by Granville A. Bennett and Marshall Goldthwait Hall (nephew of Joel E. Goldthwait).

In 1915, Goldthwait noted that the trustees had originally planned a very large hospital, which proved impossible to construct with the funds available. The trustees also had been led to believe that the care of the patients at the RBBH would cost about \$7 per week per patient. However, when

the hospital opened in 1914, it became clear that the initial estimates regarding the funds that would be required to operate the hospital were too low and that the income from the estate would be inadequate to care for the patients. This meant that the RBBH was forced to admit paying patients only a year after its opening. Financial dilemmas would be a problem throughout the institution's history.

Two other features characterized the hospital's philosophy of care. Dr. Spear noted the need for "long residence" for RBBH patients, some of whom would remain for years. Even more importantly, care from the physicians and orthopedists was set up in a coordinated fashion and each patient was under the purview of the entire staff and not divided among services. Thus, medical care at the Robert Brigham reflected a view of the patient as a person, not simply a body.

Research also began at the hospital. Arthritis, gout, nephritis, pernicious anemia, muscular dystrophy, and cardiac disease were studied. Laboratory-based and clinical research would become increasingly important over the years as the staff at the RBBH became world leaders in the understanding and management of rheumatologic conditions.

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A Major Philosophical Shift in Patient Care Follows World War I

*“A single death is a tragedy.
A million deaths is a statistic.”*

This quotation is often attributed to Joseph Stalin. Although there is considerable debate as to whether that attribution is correct, the sentiment provides a sobering reminder of the scale of destruction associated with the world wars. World War I began in 1914, the same year the Robert Brigham opened. Over the next four years, more than 9 million combatants would be killed. Famine and starvation killed others. Germany would lose 15% of its male population, Austria-Hungary 17%, and France 11%. The experiences of the Great War led to a collective trauma. The optimism of la belle époque was destroyed, and across the globe families and communities were permanently altered by the departure of their young men. Women entered the workforce in unprecedented numbers. Not only did industry need them to fill the gaps left behind by the departed men, but the women themselves also needed income to compensate for the loss of primary wage earners (Ferguson 2006). The large number of war wounded, in combination with a societal shift that saw more women in the workforce, would help pave the way for women to fill new roles in rehabilitation.

Between 1918 and 1923, the Robert Breck Brigham Hospital was leased by the government to care for the wounded and for those with diseases that resulted from the war. The RBBH patients were transferred to area nursing homes and members of the medical staff were deployed around the globe.

Dr. Goldthwait had been appointed by the American Orthopaedic Association to chair a committee to estimate the manpower and

other resources that would be needed in the event that the US entered the War (Gritzer and Arluke 1985). Soon after war was declared, a call came for orthopedic surgeons to join the war effort. Goldthwait sailed to Liverpool with twenty fellow orthopedic surgeons and was named chief of the orthopedic section of the American Expeditionary Force. Serving for twenty-two months, he was eventually promoted to Brigadier General and for years was an instructor at the US Army War College.

In many ways, the war was ultimately beneficial to the mission of the hospital. The war helped the hospital to survive financially, and involvement overseas gave its leadership a new vision of hospital care. Goldthwait returned from the service eager to implement new concepts and to put the RBBH on a more progressive course throughout the 1920s. His vision for the young hospital was profoundly influenced by a Cambridge, England hospital started before the war by Dr. T.S.P. Strangeways (1866-1927), which combined clinical care and research in arthritis, and by Drs. Robert Jones and Frank Pemberton (Obituary 1961).

In these years, the Robert Brigham was still primarily noted for its orthopedics. Increasingly, the hospital received referrals from larger institutions like Boston City Hospital which could not provide specialized care.

New professionals in arthritis care: physical and occupational therapy

Occupational and physical therapists assumed an important role at the RBBH after the war. Even before army service, Goldthwait realized the importance of allied health professionals in arthritis care. On returning to civilian life, he was instrumental in establishing and nurturing these professionals, some of whom were studying in fledgling – now historic – schools such as the Boston School of Physical Education and the Boston School of Occupational Therapy. Indeed, clinicians that we now know as rehabilitation specialists were just



*Physical and occupational
therapy specializing in
rheumatic diseases started
at the Robert Breck Brigham
Hospital.*



A young patient enjoys a panoramic view from the old Robert Brigham. The spires of the Mission Church can be seen in the foreground, with the old John Hancock building visible behind.

beginning to define the parameters of their new disciplines. Goldthwait's approach to care was in line with what these new professionals were trying to achieve, providing a synergy that no doubt helped this work move forward. Goldthwait emphasized that treatment needed to go beyond surgery and should include health education and vocational training. He agreed with fellow RBBH surgeon Robert Osgood, who noted, "Orthopedic surgery has a very large part to play in...conserving and restoring the function of the locomotive apparatus of the wounded [and] in providing the physical possibility...by which the war cripples may become happy, productive, wage-earning citizens, instead of boastful, consuming, idle derelicts"(Osgood 1916). Goldthwait also advocated the use of strength-building exercises for recuperating and healthy soldiers as well as for the "industrial army" of civilians.

The Boston medical community proved to be a fertile ground in which the new professions of physical and occupational therapy would thrive. Unlike most other areas of the country, where nurses functioned as masseuses or instructed patients in corrective exercises, Boston physicians, some of whom specialized in physiotherapy (physical therapy), worked in their offices with women who were trained in physical education. In planning for the war, Goldthwait had led an effort to bring this role



The occupational therapy room at the Robert Breck Brigham Hospital, 1923

for women into the military. Originally called “women’s auxiliary aides,” these women were placed in the Army Medical Corps’ Division of Orthopedic Surgery and “specialized in the application of physical agents, occupational therapy and dietetics” (Gritzer and Arluke 1985, 53). Later named “reconstruction physiotherapy aides” (and “rubbing angels” by the wounded soldiers

with whom they worked), these women were pioneers in the profession of physical therapy (Gritzer and Arluke 1985; Hazenhyer 1946, cited by Gritzer and Arluke 1985).

The therapy roles that developed at the RBBH broke new ground. Historically, physical therapy had been considered a branch of medicine, practiced by doctors who specialized in helping patients return to full functionality, using treatments such as exercise, hydrotherapy, and electrical devices (Gritzer and Arluke 1985). (These physicians would become known as “physiatrists,” and in the 1940s would become part of the specialty of physical medicine and rehabilitation.) The RBBH approach of separating physical therapy into its own department was new and helped advance the development of physical therapy as a distinct discipline. Winifred Tougas was one of the early directors of the physiotherapy department at the Robert Brigham. She instructed students from the Boston School of Physical Education and also started the practice of keeping a photographic record of each patient’s progress.

Occupational therapy had a longer and more autonomous history than physical therapy. The idea of focused activity as beneficial to recovery dated back to ancient Egypt. In the 18th and 19th centuries, “moral treatment” or “ergotherapy” was used for asylum inmates; the idea of work as cure became more generally popular around the turn of the century.

Occupational therapy professionals made great strides in developing their profession and enhancing patient care at the RBBH during the post-war era. The first hospital-based occupational therapy department in the nation was established at the Robert Brigham and was led in the early years by Marjorie Taylor. Students from the Boston School of Occupational Therapy were instructed at the hospital. Occupational therapy was available through a doctor's prescription and included the use of games and exercise machines to improve muscle strength and joint mobility. The department became well known as Taylor lectured around the country and described the hospital's programs.



"People used to be admitted for diagnostic workups. There were some real benefits to bringing someone to the hospital who had early rheumatoid arthritis... You got to know a patient somewhat better by hospitalizing them; it brought a focus to the disease and it taught them a lot, because they got to talk to other patients, nurses and therapists."

The Robert Breck Brigham
Oral History Project

Nursing in the early years

Throughout the hospital's history, nurses played a vital role. In its early years, reflecting trends of the day, the hospital's superintendent and assistant superintendent were registered nurses and graduates of hospital training schools. They were among the early cadre of licensed nursing professionals in the United States, as the profession's move toward standardized education and practice and licensure for trained professionals was still in its infancy. In 1923, the Robert B. Brigham School for Attendant Nurses was established. The graduates of its twelve-month course, which was later expanded to eighteen months, became licensed practical nurses, trained to provide certain aspects of hands-on care under the supervision of a registered nurse. The school remained in operation until 1951, when it closed so that funds could be used to construct a much-needed nurses' residence.

In the 1920s at the RBBH, nurses cared for patients who stayed, on average, over seven months – much longer than patients in the gen-

eral hospitals of that period. As a result, nurses often developed close relationships with their patients. Because patients were often physically dependent and needed assistance for many functional activities and therapeutic exercises, the ratio of nurses to patients was less than one would see in a general hospital. “District visiting nurses” from the



In a move that presaged the outcomes movement of the 1990s, the department compiled statistics on discharged patients to document their physical and socioeconomic status results. Patients who began or returned to school or work constituted a measure of success.

hospital’s home service department visited discharged patients to ensure that adequate treatment was being carried out at home.

Nursing during this era was hard physical work. Nurses fed, bathed, shaved, and dressed patients. They provided bedpans, administered medications, drew blood, measured vital signs, and prepared poultices. In addition, nurses performed housekeeping duties (cleaning wards, equipment, and china), organized linens and supplies, and supervised orderlies and nursing students. Many nursing school graduates during this era did private duty nursing, often for wealthy patients. Private duty nurses or “specials” often worked at the RBBH, at the request of private patients.

Social work and the Ladies’ Committee

Like nursing during this era, social work had only recently been professionalized. In the early days, the social service department at RBBH had only one person who did multiple jobs. This included screening applicants for admission according to economic, geographic, and physical criteria. The last criterion was confirmed during a home visit. The social worker also educated ward patients and their families and assisted the home service department in providing services for former hospitalized patients. Later, students in the social work program at Simmons College would intern at the hospital.

By providing social services and finding vocational training opportunities, the social service department was able to move patients out of the hospital, which, as the 1924 Annual Report noted, was crucial to its growth. In a move that presaged the outcomes movement of the 1990s, the department compiled statistics on discharged patients to document their physical and socioeconomic status results. Patients who began or returned to school or work constituted a measure of success.

The Ladies' Committee began operations soon after the hospital opened, and was formally incorporated in 1924. It was composed mainly of wives of physicians or corporation members with "Boston Brahmin" backgrounds. Its activities included the donation and solicitation of items and services. The committee once arranged to borrow an automobile from a Walter B. Leach, which was used to take patients and nurses on rides in the country. In addition, it arranged patient events such as concerts and caroling; on one occasion, the committee invited evangelists from the Billy Sunday Tabernacle to provide musical entertainment.

Like other educated women of the period, members of the Ladies' Committee were influenced by national movements in social reform and community health education. At the hospital, they ran the library service and helped young patients with their schoolwork. Later, they helped persuade the Boston School Committee to provide a full-time grade school teacher for hospitalized children, an arrangement that continued for decades. Individually, they gave money to needy patients and their families. In time, they would turn their attention to fundraising and to educating the community about the hospital's work.

Rejecting the notion of "incurable"

In 1925, the hospital had an identity crisis that played out in the courts. Differences between the corporation, board, and the staff over the purpose of the RBBH had been evident throughout the institution's



"No patient who enters is regarded as incurable...no matter what the previous diagnosis. Therein lies the special opportunity for those who enter the hospital for chronic cases."

Robert Brigham Capital
Campaign Brochure

short history. It involved tension between two different visions for the hospital. One view held that the RBBH should be a haven for humane, custodial care. The alternate view held that the hospital should embrace a more aggressive approach towards treating chronic illnesses, and toward actively restoring function and productivity even in patients for whom cure or prevention of some disability was impossible. An additional dimension to the debate involved whether or not “private pay” patients should be admitted, or whether the hospital should be devoted exclusively to those who had no means to pay for their care.

These tensions mirrored the differing opinions on the treatment of chronic diseases that were held at the time by physicians, restorative orthopedic surgeons, and the general public. On the one hand was the group schooled in the view that all arthritis was the same and inexorable; on the other hand were those whose opinions were grounded in biology and who held the view that treatment was necessary and effective and that even rehabilitation needed to be active.

In a 1925 court action over the interpretation of Robert Breck Brigham’s will, the differences between the trustees and staff came to a head over whether or not the hospital could continue to admit curable and private patients. It had been charged that admission of these categories of individuals violated the will’s terms. The RBBH staff predictably countered with the arguments that the hospital was not a rest home, and that the sole admission of free (public) patients, who were still in the majority, would quickly bankrupt the hospital, or at least severely reduce the number of treated patients. Private patient admissions were also important to keep physicians on staff, as physicians depended on income from private practice for their financial survival. This was true at all local institutions; it was not until well into the twentieth century that the physicians affiliated with teaching institutions would receive full-time salaries.

The court ruled that RBBH patients need not be destitute or “incurable.” In the 1925 Annual Report, Hollis French (1868-1940), the hospital’s president, wrote about what the ruling meant for the institution:

The decree recently handed down by the Supreme Judicial Court of this state confirms us in our methods of managing the hospital...The decree...defined what was meant by Mr. Brigham as 'Citizens who are without necessary means of support,' and it has been determined that applicants to be eligible need not be entirely destitute of all property. The Court also decided that we might admit an applicant suffering from a chronic disease even if there were reasonable probability that by treatment such person's condition might be alleviated. In other words, we are not obliged to confine our ministrations only to incurable cases. (Robert B. Brigham Hospital 1925, 7)

Some time after the court decision, the hospital came to be known as simply the Robert Breck Brigham Hospital, though the phrase "for Incurables" was not legally dropped until 1954 (The Commonwealth of Massachusetts 1954). Reflecting its progressive attitude, the hospital began to re-frame the idea of "incurable" cases, embracing instead a framework of "chronic illness." A 1928 Capital Campaign Brochure poignantly described the hospital's evolving philosophy of care:

No patient who enters is regarded as incurable...no matter what the previous diagnosis. Therein lies the special opportunity for those who enter the hospital for chronic cases. Each patient is made the subject of an intensive, deliberate study of his disease. His treatment is planned and carried out with no time limit in view. These patients, physically wasted, isolated from their kind, financially depleted, who are admitted to the Robert B. Brigham Hospital, enter at once upon an atmosphere of hope. From the prospect of being bedridden or chained to a wheel chair as long as life lasts, with hardly an opportunity to preserve a decent self-respect, they face the chance of becoming normal mentally and physically. The best medical knowledge available, an expert staff, consultation of specialists, are all ready to help...The Robert B. Brigham Hospital also serves as a demonstration for the function of the chronic hospital. The old method was to give nursing care until the end came. The new method recognizes that chronic disease constitutes half the cases in the general hospital, and that these cases need hospital study, treatment and care over a long period. (Robert B. Brigham Hospital 1928)

The implications of the court decision and the related, ongoing development of the hospital's philosophy cannot be overstated. The effects reached far into the future, influenced as well by the end of the hospital's original endowment, and changes in the way hospitals charged patients for care (including the advent of Medicare and Medicaid in 1965). The charity hospital that was started for "incurables" would completely shift its ethos and basic character. From being a custodial, palliative warehouse for the infirm, the Robert Brigham would fully embrace active treatment of rheumatic diseases, research into their root causes, and critical analysis of long-term results. It would continue to address these challenges and refine its approach to care amidst world-wide economic hardship during the Great Depression.

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Developing an Approach to Care and the Effects of the Great Depression

As the hospital began to carve out its approach to the care of chronic diseases, it continued to help shape the new movement in rehabilitation. This movement recognized the importance of a multifaceted approach to treating the disabled. Its philosophy was positive, aiming for restoring the disabled person to as full a life as possible. While clearly growing out of the experience with treating wounded soldiers from the war, this approach would be applied in the treatment of chronic disease patients.

In this era, many prominent physicians and scientists were to play key roles. Walter B. Cannon (1871-1945), a prominent physiologist, and David Edsall (1869-1945) of Harvard Medical School, joined the board and helped nurture the innovations in the medical and surgical management of rheumatic diseases and the research into the mechanisms of disease that were to occur in the ensuing decades. Surgical reconstructive operations were developed, including knee arthroplasty operations that would anticipate and provide experience important to contemporary total joint arthroplasty, and posterior capsuloplasty for straightening of knees. Surgeons attempted hand reconstructions. A laboratory investigative program included studies on vitamins, metabolism, infection in arthritis, and glucose tolerance. The early work to evaluate treatment like the Wilder



*Dr. H. Archibald Nissen
reported outcomes of the
hospital's approach to care in a
landmark 1933 New England
Journal of Medicine article:
The Robert Brigham Hospital
Survey of Chronic Disease*

steam bath also started during this period. In 1933, Dr. H. Archibald Nissen reported the outcomes of the hospital's approach to care in a major study published in the *New England Journal of Medicine* (Nissen 1933). The study was perhaps one of the first organized outcome studies of one hospital's complete experience and the end results, including mortality, of its treatment.

The children's ward was also started in this period. Modeled after Taplow Hospital in England, children with arthritis were treated in a special unit and were no longer mixed in with adult patients. The unit was so well regarded that pediatric hospitals in the area, including Children's Hospital Boston and the House of the Good Samaritan, began sending children to the RBBH for treatment of arthritis and orthopedic disorders and, especially, Still's Disease – or systemic-onset juvenile rheumatoid arthritis, in which joint pain and inflammation are accompanied by fever, swollen glands, and other signs of systemic illness. An ambulatory care component of the pediatric program would be added in 1963 when a Clinical Treatment Center for Juvenile Rheumatoid Arthritis was launched (see Chapter 5).

The influence of Loring T. Swaim

Even as modern biology and technology were being applied to patient care at the Robert Breck Brigham Hospital, the emotional and spiritual aspect of care had its voice in Loring Swaim (1882-1964), whose personality and leadership had a profound influence on the hospital's character and the emerging field of arthritis care specialization. He was an enthusiastic teacher of medical students and other physicians, instructing them in the study and treatment of arthritis. After an internship at Massachusetts General Hospital (MGH), Swaim worked with Goldthwait for three months and was very influenced by Goldthwait's vision of how to manage chronic disease. After organizing the orthopedic department of the Clifton Springs Sanatorium in New York, Swaim returned to Boston where he started a clinic for arthritis at MGH.

As the clinic grew, Swaim saw that an outpatient clinic was not sufficient. After five years, his clinical program was moved to the RBBH where there were beds for these patients. Swaim was the chief of the

orthopedic service at the RBBH from 1924 to 1938, and remained at the RBBH until 1944. He served for a time as president of the nascent American Rheumatism Association (now called the American College of Rheumatology), and had a special interest in the prevention and treatment of arthritic deformities and in the treatment of spondylitis.

Swaim believed in the emotional, spiritual, and physical treatment of patients. In his book, *Arthritis, Medicine, and the Spiritual Laws: The Power Beyond Science*, Swaim described how he was unable to help arthritis patients much until 1933, when, he claimed, “I unexpectedly found the long-sought solution to many problems” (Swaim 1962, 6). The answer had come at a church retreat Swaim had attended at his wife’s insistence; he returned with a new-found faith in God and soon incorporated elements of that faith into his medical practice. He believed that the health of patients could be greatly improved if they practiced “the laws of the spirit.” Based on his experience following patients over many years, Swaim noted that positive changes of personality were often followed by great improvement that could not have been anticipated from medical treatment alone. He also believed that emotional trauma often resulted in a flare-up of disease.

In a 1942 address to the American Rheumatism Association, Swaim said:

Doctors have pioneered in medicine. Why should we not pioneer into the great intriguing soul in man which is spiritually ill, and heal it?...Rheumatoid arthritis is a constitutional disease. Since the disease affects all parts of the individual, to get the best results we must treat the whole individual, not only his body and mind but his *soul*...Evidence accumulates that physical health is closely related to spiritual health. No constitutional disease is free from the effects of mental states. Rheumatoid arthritis is no exception. (Swaim 1942)

Swaim tried to persuade his patients to accept God’s “spiritual laws” as an answer to their emotional problems. He prayed with his patients in the hospital and tried to convert other members of the medical staff. He claimed marked improvement in the condition of his patients from this spiritual experiment.



"In the 1930s, the standard course of treatment would be one to six months in the hospital. There were no joint replacements. It was amazing; you'd see people who'd been confined to wheelchairs for weeks or months, and you'd see them leave walking."

The Robert Breck Brigham Oral
History Project

The Great Depression

The Great Depression that began with the stock market crash of 1929 affected virtually every aspect of American life; the functioning of the RBBH and the people it served was no exception. The 1929 report of the social service department noted, "There are constantly increasing requests for service to the patients or their families...unemployment made this an especially hard Christmas for a good many families and \$83.46 was given through the holiday season in cash, coal and clothing" (Robert B. Brigham Hospital 1929). In the

President's Report of 1930, it was noted that the hospital was experiencing financial difficulties and leaders foretold a ten-year struggle. That year, patients collected \$834.99 to help support the hospital.

With dwindling income, the admission of needier patients, and the lack of donations, hospital leaders began to emphasize that the institution needed to fulfill both medical and business objectives. The decade of the thirties thus became the final death knell to the old notion of the hospital as solely a charitable institution. If the RBBH was to survive, its policies had to change. The 1933 Annual Report noted:

The Hospital has just passed through the most difficult financial period in its existence. At the end of 1932 we had a deficit of over \$26,000 and in order to meet this had drawn on our invested funds. At this time also came the information from the trustees of the Robert Breck Brigham Estates... that not only could they give us nothing for the coming year, but that for an indefinite period we should not expect any more help from them. (Robert B. Brigham Hospital 1933, 6)

The end of support from the Brigham estate rekindled the discussion among the senior level hospital staff and the board about whether the hospital should close. They decided against this course be-

cause of the hospital's unique mission but launched dramatic changes in order to run the hospital more like a business. Admission standards became more stringent and certain patients were transferred to other institutions. The entire staff took a 10% pay cut, which was donated to the Emergency Relief Fund. The hospital's patient catchment area was extended beyond Boston into the New England states and even across the country.

In 1933, a decision was made to limit the number of free patients – a move hospital leaders regretted but felt compelled to do to ensure the hospital's survival. A part-pay, sliding scale fee structure was adopted in which patients paid according to where they lived. In 1934, this was \$15 a week for metropolitan Boston, \$21 a week for outlying areas, and \$24 for adjoining New England states. However, even the largest amount was a fraction of the real per capita cost of care.

One of the critical parameters that these and other changes were designed to influence was how long patients stayed in the hospital – a metric inexorably tied to the hospital's bottom line. In 1930, the hospital spent \$5.85 per patient per day. On a modern scale, it is a small amount. But it was overwhelming to an institution whose primary income, the Robert Brigham estate, had virtually disappeared. In the years before the Depression, the average stay at the RBBH was significantly longer than typical stays at general hospitals. For example, the 1929 Annual Report congratulated the staff for reducing the average length of stay from seven months and 29 days in 1928 to seven months and 18 days in 1929! This was in comparison to an 18-day average stay in a general hospital at that time. The push during the early 1930s to further reduce the length of stay had dramatic results; by 1934, the average stay was only 3 months and 8 days, and it continued to decrease.

The shorter length of stay also resulted from effective community health education and the hospital's growing reputation. Patients were admitted at earlier stages of their disease and were less ill when admitted. Tellingly, the 1933 President's Report suggested that patients who had to pay would be motivated to improve in as short a time as possible. Hospital leaders and staff, compassionate as they may have been,



A nurse at the Robert Brigham comforts a young patient.

likely saw illness through the prevailing perspective of the late nineteenth and early twentieth century, and believed it was both a moral and physical problem, involving personal volition as well as physical dysfunction.

Throughout the decade, private patients were cultivated. In 1933, the Medical Committee report outlined the desirable qualities of the hospital for private patients, noting, “There is not and never can be more than a very small amount of traffic over the hill and our situation should be forever free from the noise, dirt, and confusion that

surrounds most of our Boston hospitals” (Robert B. Brigham Hospital 1939, 18). Despite appealing to the sensibilities of private patients and encouraging physicians to admit them, it would always be difficult for the hospital to fill private beds and to attract the volume of patients other institutions took for granted. Ironically, while the revenue private patients generated was helpful, private patients required more work because there was pressure to cure them before their money ran out.

Community outreach

Indirectly, the necessity of taking cost-cutting measures to save the hospital had important, beneficial effects. The number of outpatients seen by the home service department increased as patients relied more on ambulatory follow-up. In one year, home service patient visits jumped from 1,025 to 2,005. Indeed, the hospital’s community outreach program was ahead of its time. At the RBBH, recognition of the patient as a social being was embedded in the culture. The Medical Committee noted the staff “must plan not only for the patient in the hospital but

also for the patient's family and home because nothing can retard a patient's recovery more than worry about the home situation" (Robert B. Brigham Hospital 1939, 18).

It was also felt that a chronic disease hospital, with its specially-trained medical and nursing staff, could deliver the special kind of care that extended beyond the hospital walls. Many services were developed to aid a patient's transition back into the community. The social service department, adding a second full-time social worker, began placing children in summer camps and organized a Boy Scout troop. The Junior League helped with tutoring and ran classes in current events. A mother's club was created for mutual support. As always, vocational placement was arranged whenever possible in these difficult years. In addition to a full-time grammar school teacher, a part-time high school teacher was assigned to the hospital by the city.

Educating the public, the board, and the broader medical community

In 1933, a full-time physician who was appointed to the staff, E. Douglas Taylor, helped organize some of the educational functions of the hospital through weekly clinics for medical students, staff, and community physicians. Similar lectures and clinics were also delivered by other RBBH physicians. The hospital staff was also active in educating the public about the nature of chronic disease treatment – which, according to the research of the day, was sorely needed. A state survey undertaken in 1936 found that 500,000 of some 4 million Massachusetts residents lived with chronic disease. Of these, 138,000 had a rheumatic disease, and 70% received no treatment for their condition (Robert B. Brigham Hospital 1936).

The Ladies' Committee and the area Junior League worked on getting the word out to the general public about the care that was being developed and provided at the RBBH. They sponsored "Come and See" tours to let the public see the care that was possible for the so-called "chronic" or "hopeless" cases. The Ladies' Committee also formed 38 local subcommittees to raise money and spread the word

about the RBBH, a substantial organizational feat. Over the years, these same functions would eventually be performed by paid professionals in hospital departments such as development, public relations, and social work.

During this period, the Ladies' Committee started an annual tradition that came to be known as "At Home" – a lavish dinner complete with ice carvings and Oysters Rockefeller. Mrs. Parker Converse from Marion, Massachusetts got the idea for the event when she learned that most of the trustees had never seen the hospital. The first "At Home" events were held before Christmas in the day room of the hospital, and staff members gave short talks on topics such as the medical aspects of orthopedics or the psychiatric aspects of arthritis. The events furthered the education of those interested in the work of the hospital and was a great morale booster each year.



Dr. J. Sydney Stillman with a patient undergoing hydrotherapy

Physicians and practices of the era

J. Sydney Stillman (1908-1998) was appointed chief of the medical service in 1939. He described what medicine was like in his first years at the hospital:

I first came to the RBBH in 1933 as a student house officer, at the beginning of my fourth year in medical school. The active staff consisted of three physicians and three orthopedic surgeons. Another house officer and I did all the admission histories, physical examinations, and initial laboratory work on all service patients. We made evening ward rounds, assisted at operations, had certain routine duties in the laboratory, and were available for emergencies. There was no resident physician. One laboratory technician ran the one-room lab. The average length of stay, not counting the incurables of whom we still had three, was three months and eight days. One floor of the private wing was closed and there were as few as four patients on the other. (Stillman, personal communication)

In a short essay on the history of the hospital, circa 1966, Stillman reflected on some of the early thinking about arthritis and rheumatic disease, at a time when prolonged bed rest was the major intervention:

Rheumatic fever and its consequent heart disease was a common problem, a particular interest of Dr. Spear. The periods of hospital rest were prolonged, awaiting the subsidence of the active process. Knowledge of the role of Beta hemolytic streptococcus was far in the future so that each new admission brought with him the agent which reactivated the disease in the convalescents...Drugs [for arthritis conditions] were used sparingly. In the two years and three months of her first admission for juvenile rheumatoid arthritis, a patient had no medicine prescribed except for one order: "Aspirin, 10 grains, STAT"...Several of the orthopedists believed in the liberal use of cathartics...They also prescribed bizarre diets for rather hazy reasons. When I arrived...I was distressed to see ill, miserable, undernourished patients turn their faces to the wall when their tray bearing a mess of overcooked vegetables – called the Haye Diet – was delivered. (Stillman circa 1966, 2-3)

Stillman was quick to point out that against the backdrop of the care standards of the time, the care at the Robert Brigham had much to offer. He notes, “The staff at the Robert Brigham gave patients hope and their conservative medical and orthopedic treatment benefitted many” (Stillman circa 1966, 3).

Stillman’s appointment as chief coincided with an expansion of the medical service so that it could take over the admission and basic care of all patients. Physicians of that time who worked with Stillman included Granville Bennett, Marshall Goldthwait Hall, and Theodore Feldman. The orthopedic surgeons served as consultants and worked closely with these internists. When patients were transferred for surgery, the internists would then be the consultants.

Feldman, a graduate of Tufts Medical School (class of 1935) who trained on the Tufts Medical Service at Boston City Hospital, came to the RBBH in the late 1930s. He was fascinated by the interplay between a patient’s mood and rheumatoid arthritis and taught himself psychiatry, psychosomatic medicine, and psychopharmacology. He became a liaison between the staff and the social service department.

Research program launched

A permanent research program was established in 1939 and Dr. Theodore B. Bayles (1911-1979) was appointed its director. Bayles understood the importance of fundamental research into the basic causes of rheumatic disease and set out to build a robust research program. Because patient care was always a first priority at the RBBH, research was usually clinical in nature. In the 1930s, research had examined the requirements for and therapeutic effectiveness of various vitamins. Later, Bayles evaluated the efficacy of gold salts in selected patients with rheumatoid arthritis (Bayles 1961). Dr. Earnest Hooton (1887-1954), an anthropologist from Harvard, made systematic physical measurements of patients to see whether there were special physical types of individuals who developed rheumatoid arthritis versus osteoarthritis, and Dr. Carl Seltzer would continue this work (Stillman circa 1966).

Other research studied the temporomandibular joint, Vitamin A requirements in chronic arthritis, physiotherapy, the personality of patients with arthritis, and re-employment in chronic arthritis. These projects were overseen by a Research Council which included medical luminaries such as Soma Weiss (1898-1942), physician-in-chief at the Peter Bent Brigham Hospital, and Charles Janeway (1909-1981) of Children's Hospital Boston.



Dr. Theodore Bayles

Decade's end

As the 1930s came to a close, the hospital's reputation as a leading institution for the care of those with rheumatic disease was chronicled in a report in the *Annals of Rheumatic Diseases* (Duthie 1939). Touting the collaborative approach to care that the hospital espoused, as well as its innovative services aimed at supporting patients in the community, the author noted, "As a result of...close association of the physician and orthopaedic surgeon in the treatment of patients during and after their stay in the hospital, a surprisingly high proportion of cases of chronic arthritis return to active occupations and become wholly or partially self-supporting" (Duthie 1939, 207).

The decade ended with two events that could be viewed as symbols of the turbulent times and the commitment that sustained the hospital through them. The first was a hurricane in 1938 which raged up the East Coast. It caused considerable damage to the roofs, doors, and windows of the hospital buildings. Fortunately nobody was injured and the repairs were covered by insurance. The second was the hospital's twenty-fifth anniversary, which was marked by a lavish open house organized by the Ladies' Committee. Four hundred people attended



Members of the nascent specialty of rheumatology met in Atlantic City in 1937. Although the caption refers to the “National American Rheumatic Association,” the actual name of the organization at the time was likely the American Rheumatism Association – precursor to today’s American College of Rheumatology. Dr. Louis Spear, the Robert Brigham’s first physician-in-chief, is in the second row, third from the right; Dr. Loring Swaim, chief of orthopedics at the Robert from 1924-1938, is in the front row, fifth from left.



The Robert Brigham copy of the above photo included the following typed identifications, which are incomplete. All are listed from left to right. **Row 1:** unknown, unknown, A. Almon Fletcher (Toronto), Ernest E. Irons (Chicago), Loring T. Swaim (Boston), Russell L. Cecil (New York), Homer Swift (New York), Ralph Pemberton (Philadelphia), unknown, unknown, W. Paul Holbrook (Tucson). **Row 2:** unknown, Maurice Lautman (Hot Springs), Robert T. Phillips (Boston), Nathan Sidel (Boston), I.P.P. Hollingsworth (Philadelphia), T. Preston White (Charlotte), Theodore F. Bach (Philadelphia), James F. Rhinehart (San Francisco), Louis M. Spear (Boston), John W. Gray (Newark), James C. Small (Philadelphia). **Row 3:** unknown, unknown, G. Douglas Taylor (Montreal), Ezra Lipkin (Detroit), L.M. Lockie (Buffalo), unknown, Charles H. McEnerney (Washington), Howard K. Thompson (Boston), Charles Short (Boston), John P. Stump (New York City). **Row 4:** unknown, unknown, Philips [sic] S. Hench (Rochester), Walter Bauer (Boston), H. Archibald Nissen (Boston), Robert B. Osgood (Boston), Martin H. Dawson (New York), Ralph H. Boots (New York), Charles E. Scull (Philadelphia), A. S. Gordon (Brooklyn), unknown

the tea and dinner, including the Boston mayor, Maurice Tobin (1901-1953). For this event, a hospital official wrote:

From the opening of the hospital, the care of the patient has come first, and the disease has been treated as a condition superimposed on the patient rather than as a condition in which the patient is only necessary and oft-times a bothersome part of the disease. The same spirit of treatment of the patient first has been, and still is, the guiding motive in the work of the hospital. (Robert B. Brigham Hospital 1939, 6)

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World War II and the Post-War Years

World War II was a global war that was underway by 1939 and ended in 1945. It was the most widespread war in history, with more than 100 million people serving in military units. The United States entered the conflict in 1941 after the Japanese attack on Pearl Harbor. In a state of “total war,” countries placed their entire human, economic, industrial, and scientific resources into service of the war effort as they fought for survival. Marked by events involving the mass deaths of innocent civilians, there were up to 70 million fatalities from battles, bombings, disease, starvation, massacres, and genocide, making the war the deadliest conflict in human history. On average, nearly 30,000 people were being killed every day for six years. An estimated 11 to 17 million civilians died as a consequence of Nazi ideological policies, including the systematic murder of six million Jews, two million ethnic Poles, and four million others “unworthy of life” including the disabled and the mentally ill. In the atomic bombings of Japan, 90,000 – 166,000 people in Hiroshima and 60,000 – 80,000 in Nagasaki perished from flash or flame burns and falling debris (Hastings 2011).

With such mind-numbing horrors, it is not possible to portray fully World War II’s profound impact on every aspect of civilization and human affairs – then and for generations to come. No one alive during those years was not affected in some way. In the aftermath, the enormity of the destruction of people and their institutions led to a dramatic regrouping and rebuilding – as if the whole world was being reset. One can only surmise the survivors’ relief as the devastation finally ended and their “can-do” resolve after the triumph of good over evil. Those

returning home were determined to make the most of the opportunities that lay before them.

During the war years, the staff at the Robert Brigham was drained as younger staff, including Stillman and Bayles, went into the armed services. Senior physicians, including Louis Spear and Loring Swaim, stayed on to help run the hospital. The social service department – aided by the Grey Ladies of the American Red Cross and the Ladies' Committee (renamed the Robert Breck Brigham Associates in 1949) – helped staff many hospital functions during the war. The new hospital leaders that would emerge in the post-war years, as well as the nurses, therapists, and other hospital staff, were the sons and daughters of people who had been displaced and/or directly affected by the war or its consequences. Their perspective, values, and approach to work were tied to the world events that had transpired, and they were members of a generation that would oversee enormous changes in every aspect of life. They would be involved in major medical developments that would forever change the treatment of arthritis disorders, ushering the hospital into the modern age. With this, the hospital's early identity as a solely charitable institution would continue to give way to a broader mission and purpose.

Teaching mission expanded

As the decades progressed, the Robert Breck Brigham Hospital assumed an increasingly prominent role in preparing generations of professionals who would care for patients with arthritis and rheumatic diseases. In 1943, the physical therapy (PT) department affiliations increased to four schools, and training time was accelerated because of the war and the needs of the Army Medical Corps. In that year, one member of the department and forty area PT graduates affiliated with the hospital were physical therapy aides in the army. Because of the post-war need for larger numbers of rehabilitation workers, members of the PT department began to share their expertise with students at the School for Attendant Nurses, teaching anatomy, physiology, massage, body mechanics, and water exercise.

When Stillman and Bayles returned from the war, the informal relationship between the Robert Breck and the Peter Bent Brigham Hospitals was formalized. Stillman and George Thorn (1906-2004), physician-in-chief at the Peter Bent Brigham, started a rotation at the RBBH for Peter Bent Brigham Hospital (PBBH) residents. Previously, the Robert Brigham could not be accredited for residency training because of its specialized work, but the house staff experience at the RBBH was acclaimed. By bringing PBBH residents to the Robert Brigham, Stillman and Thorn were seeking more than just extra manpower; they hoped it might be a way to interest young physicians in the care of patients with systemic rheumatic conditions. Rheumatology and orthopedics were not as glamorous as other specialties, but after the war, advances made it possible for specialists in these fields to do something other than help patients cope with their disabilities, which made these specialties more attractive to aspiring doctors. For example, rheumatic heart disease, which once caused many deaths, could now be prevented with penicillin. Doctors could now also cure microbial infections of the joints.

Financial issues and manpower

The financial difficulties of the hospital continued. In addition to operational shortfalls, the hospital faced costs associated with state-mandated improvements for the aging buildings. It also struggled to find sufficient numbers of trained personnel. In a period when there was no minimum wage standard for nurses and other essential hospital personnel, even non-profit institutions like the Robert Brigham had to offer perks such as a pension plan and a 44-hour work-week in order to compete for nurses.

A nursing shortage plagued the institution through the war years and for some time after. In 1949, the hospital made some bold moves in order to attract nurses to the organization. It had sold a strip of land, upon which its residence housing for nurses stood, to the adjacent New England Baptist Hospital for the sum of \$125,000. Acknowledging that the housing was sub-standard for the time, the hospital wanted to build a new nurses' residence, but could not do so on the

remaining land and still accommodate the hospital's Training School for Attendant Nurses. The 1949 President's Report noted, "...we have decided, with deep regret, to give up our school when our present class graduates next Fall. By giving up the School, we will be able to build a much less expensive Nurses' Home" (Robert B. Brigham Hospital 1950, 194-5). Hospital leaders felt comforted to know that the Massachusetts Department of Vocational Education had plans to establish training schools for attendant nurses across the state, ensuring an ongoing influx of new practitioners. The hospital report goes on to describe the Nurses' Home, which would house 34 nurses, noting, "Each nurse will have an apartment of bed-living room, bath, kitchenette, refrigerator, etc., some with two bed-living rooms sharing the other conveniences. The nurses occupying these will pay for them as they would for any apartment on the outside but the charge will probably be less" (Robert B. Brigham Hospital 1950, 195). A benefactor promised to build two of the buildings, and others offered help with furnishings.

As financial challenges continued, additional support would be needed to sustain patient care. In 1949, the RBBH, which had received no income from the Brigham estate for eighteen years, was forced to pass on more of the operating costs to patients.

These financial pressures could not have come at a worse time for RBBH patients, who faced financial issues of their own. During the post-war years, vocation training and employment were difficult to get for the handicapped, especially after the return of many able-bodied veterans in 1945. Lack of housing and the scarcity of care facilities for patients with chronic disease became major community problems. With the high cost of living and the scarcity of jobs, patients at the RBBH, already underemployed or disadvantaged by their disease, had even greater need of help.

Ladies' group

The Robert Breck Brigham Associates expanded their activities to help patients feel at home during their hospitalization and to provide them with amenities to lighten their days. They started the gift and coffee shops which became substantial fundraising vehicles.

Many of the physicians' wives were prominent members of the Associates. Rachel Bayles was a mainstay and ran a library operated by the group. Born in Brookline, she was the daughter of a senior partner in the law firm of Peabody, Brown, Rail, and Store, and the granddaughter of the minister of King's Chapel. She was educated at Winsor School and the Pierce Secretarial School, and spent two winters in Paris, mastering her French.

Later, Joycelyn Austen, the wife of Frank Austen, who would become physician-in-chief in 1966, served as president of the Associates. She would oversee the many established operations of the group, including the running of the library and the gift shop. Under her tenure, the Associates also subsidized a hairdresser, visited patients, and donated needed equipment to hospital departments. Mrs. Austen's term as president coincided with the years leading up to the merger that created the Brigham



The ladies of the Robert Breck Brigham Associates did many things to make each patient's hospital stay more comfortable. Here, Mrs. J. Sydney Stillman (left) and Mrs. John B. Buttrick talk with a young patient, circa 1950.



Mrs. Steele was passionate about her volunteer work on behalf of children with arthritis. In this 1970 photo, she chats with Dr. Clement Sledge at an "At Home" event.

and Women's Hospital. She was instrumental in bringing the auxiliary organizations from the component hospitals together, which resulted in the creation of the Brigham and Women's Hospital Auxiliary, with Austen as its first president.

The ladies' group also included some colorful individuals from the community. Jeannie Steele, the daughter of a vaudeville performer, was a chanteuse, model, and consultant in the fashion industry in Hollywood when she came home to the Boston area for a visit on December 7, 1941 – the day of the Pearl Harbor attack. Her father, fearing further attacks in California, refused to let his daughter return, and she spent the rest of her life on the East Coast. A member of the Junior League, she was active in many volunteer projects in the community. But she found her passion at the RBBH where she embraced the cause of young children with arthritis. She also organized the "Tray Ladies" who distributed decorated trays for patients who were hospitalized during the holidays. Steele continued her singing career after moving to Boston, and was a regular performer at the Cocoanut Grove Club, a fashionable nightclub in the city. As fate would have it, she traded her shift with Goody Goodelle on the night of November 28, 1942, when the deadliest nightclub fire in US history occurred at the club. The fire killed 492 people and injured hundreds more; fortunately, Goodelle escaped.

Research

At the hospital, research continued despite the financial crises. Bayles' extraordinary drive and productivity were evident in the steadily increasing number of research publications. Studies examined the effects of diet and pregnancy in rheumatoid arthritis. Amyloid disease associated with rheumatoid arthritis was felt to be ameliorated by prolonged administration of raw liver. Gold salt therapy was expanded. In 1948, Bayles and Dr. Joseph Ferrebee attempted to produce arthritis in animals.

At the mid-point of the twentieth century, a dramatic advance in the treatment of inflammatory joint disease was announced. On April 20, 1949, a *New York Times* article broke the news of perhaps one of the most significant discoveries ever announced at a Mayo

Clinic staff meeting (Laurence 1949). That evening, Philip Hench (1896-1965) and colleagues reported treating 14 cases of rheumatoid arthritis with a precious material called “Kendall’s compound E,” or 17 hydroxy-11 dehydrocorticosterone, later named cortisone (Hench et al. 1949).

The news of the compound’s apparent effectiveness spread quickly both within and outside of the medical community. Newsreels at movie theaters showed “before and after” footage of arthritis patients rising miraculously from their beds and wheelchairs. There was talk of complete remission of arthritis symptoms. That June, Hench and colleagues showed dramatic film clips to attendees at a meeting of the American Rheumatism Association in the Waldorf-Astoria hotel, which met with thunderous applause. Many felt that they had seen rheumatoid arthritis cured (Weissmann 2009).



(Left)Rachel Bayles, wife of Dr. Theodore Bayles, was an active member of the Robert Breck Brigham Associates. She is shown here in the gift shop run by the group.

(Right) In this 1964 photo at the hospital’s 50th Anniversary Celebration, Mrs. Joel C. Goldthwait (left), then president of the Robert Breck Brigham Associates, is shown with Howard Gambrell Jr., hospital president, and Mrs. Parker Converse, past president of the Associates.



In 1950, the Nobel Prize in Physiology or Medicine was awarded to Hench, the only rheumatologist ever to receive that honor, and two biochemists, Tadeus Reichstein (1897-1996) from Basel, Switzerland, and Edward Kendall (1886-1972) from the Mayo Clinic, for “their discoveries relating to the hormones of the adrenal cortex, their structure and biological effects” (Nobelprize.org 2013).

The acclaim was followed by the gradual realization that steroid treatment had a considerable downside; some complications were even fatal. It was not the “cure” that many had believed it to be. A famous account was that of the French painter, Raoul Dufy. Dufy’s rheumatoid arthritis began in his early youth and he came to Boston and the Jewish Memorial Hospital at age 73 with generalized disease and involvement of all joints, causing severe pain and limitation of movement. Over three months of regular steroid therapy, he went from being completely infirm and immobile to being mobile and able to walk with crutches. He was able to squeeze out his paints unaided for the first time in a number



Shown left to right are Dr. J. Sydney Stillman, Dr. John David, Roberta David, and Susan Schur.

of years, and his art became “freer and the lines less labored than those in some of his latest work before treatment” (Homburger and Bonner 1979, 670). However, during the therapy he gained weight, retained fluid, developed a moon-like face, and had compression fractures of the back from worsening osteoporosis. Six months after his hospitalization, he developed a large bacterial abscess which had to be drained repeatedly, and three years afterward he died in France of an intestinal hemorrhage (Homburger and Bonner 1979).

Fortuitously, leading investigators of adrenal hormones and metabolism, such as John G. Harter, William J. Reddy, Don H. Nelson and George Thorn, were at Harvard Medical School and the Peter Bent Brigham Hospital, and patients with inflammatory rheumatic conditions and the physicians devoted to its study and treatment were up the hill at the Robert Brigham. For this reason, less than a year after the Hench report, cortisone and adrenocorticotrophic hormone (ACTH, which stimulates cortisone’s release in the body), were used in patients with rheumatoid arthritis, systemic lupus erythematosus, and gout at the Robert Brigham. But even more importantly, the mechanisms of action and short- and long-term side effects of the agents were being systematically studied (Thorn et al. 1949; Vaughan, Bayles, and Favour 1951; Meakin et al. 1960).

This evaluative work was most important. The effects of cortisone in patients with rheumatoid arthritis were so dramatic that it became widely used before it could be evaluated critically. It would soon be realized that cortisone had serious side effects such as unsightly rounding of the face and redistribution of body fat, weight gain, emotional lability, high blood pressure, diabetes, thinning and fragility of the skin, osteoporosis, and an increased susceptibility to infections (Smyth, Freyberg, and McEwen 1985; Homburger and Bonner 1979). Nevertheless, the agent’s appearance marked a new era of research into the basic immunological mechanisms of rheumatoid arthritis.

Bayles did some of the earliest immunologic studies of the rheumatic diseases, anticipating the work of Frank Austen, John David, and Peter Schur and their colleagues who followed. In the early 1950s he and John Vaughan studied the complement system in patients with systemic

rheumatic diseases and were the first to show that whereas the blood level of this protein was normal in patients with rheumatoid arthritis, it was an acquired abnormality in patients with systemic lupus erythematosus, thus distinguishing these diseases based on their immunochemistry. Later, Bayles and his colleagues in the pathology department at the Boston Hospital for Women confirmed that patients with systemic lupus erythematosus possessed antibodies to antigens in the nucleus of the cell.

Arthur Hall, a leader in the rheumatology training program at the hospital (see Chapter 10) whose father, Francis Hall, was also a rheumatologist, had been persuaded by Sidney Cobb to test for rheumatoid factor in the participants of the famous study of cardiovascular disease based in Framingham, Massachusetts. He and Peter Barry (1930 – 2008) performed landmark studies on the long-term consequences of hyperuricemia and gout and the first studies looking at the relationship between uric acid, rheumatoid arthritis, and heart disease.

Bayles played a key role in the training of many physicians caring for patients with rheumatic diseases in the United States and around the world and received the first training grant in rheumatic disease from the National Institutes of Health in 1956, which continues to this day. In 1961, he received an award from the National Institutes of Health to support a clinical research unit.

Rising expectations and rising costs

In the 1950s, many important figures were recruited to the medical staff, among them Paul Fremont-Smith, Peter Kulka, and Joel C. Goldthwait (1919? – 2004) (grandson of the founder, Joel E. Goldthwait). Many students, residents, and fellows spent time at the hospital as the research program grew. All contributed to the clinical care and scope of research at the institution, which was entering a new era in the treatment of rheumatic disease. Yet even as the treatment prospects for patients brightened, the hospital continued to struggle with low patient census and nursing shortages. More sophisticated technology and the increasing complexity of patient care necessitated greater numbers of highly-trained and highly-salaried staff. Between 1946 and 1950, the number

of hospital employees per patient had increased by almost one-third, while pay scales doubled. The minimum wage was increased and the 40-hour work week started. In addition, until mid-decade, the number of public patients climbed. Even though the average length of stay was only 18 days, the hospital could not raise the daily rate for private patients enough to keep pace with escalating salaries. By the 1960s, inflation took its toll. Nursing salaries at the RBBH increased 20% in one year to keep up with those of area hospitals. Improvement in benefits for hospital personnel also drove up costs.

Financial problems preoccupied Horace Altman, the first professional administrator of the hospital, when he arrived as executive director in 1953. Altman instituted a number of measures to put the hospital on a stronger financial course. Infusions of research grant support and increasing public awareness of the effectiveness of chronic disease treatment would help fill the hospital's beds, and new clinics increased referrals.

Despite these enhancements, the RBBH would struggle to exist. A survey of the hospitals of greater Boston cast doubt on the wisdom of supporting small specialized hospitals. Indeed, as early as the 1940s, the idea to have one Harvard medical center in the Longwood Avenue



In this 1977 photo, Horace Altman (right), who held administrative positions at the hospital between 1953 and 1971, talks with departing director, Don Broas and his wife, Judy, who was a member of the Robert Breck Brigham Associates.

area had been discussed. As small hospitals faced greater financial pressure and governmental regulation, discussions about a merger of area institutions intensified. In 1959, representatives from the Robert Breck Brigham Hospital, the Peter Bent Brigham Hospital, the Massachusetts Eye and Ear Infirmary, Children's Hospital Boston, the Boston Lying-in Hospital, and the city's Free Hospital for Women were invited by Dean George P. Berry (1898-1986) of Harvard Medical School to consider the possibility of a combined physical operation in new facilities on the site of the Peter Bent Brigham Hospital. Although the two women's hospitals merged in 1966 to become the Boston Hospital for Women (Cappers 1975), it wasn't until 1980 that the more substantive merger would take place.

In the 1960s, changes in health care financing caused additional strain on health care organizations of all sizes, strain that was acutely felt at small specialty hospitals like the RBBH. In the hospital's 1969 Annual Report, Horace Altman noted:

John W. Gardner, former Secretary of Health, Education and Welfare, once said, 'History never looks like history when you are living through it...It always looks confusing and messy, and it always feels uncomfortable.' I believe that history is about to be made in the health care field in this country, and for those of us in it, it will seem to be what Secretary Gardner suggested – confusing, messy and uncomfortable. (Robert B. Brigham Hospital 1969)

There were ample reasons for this characterization of the trends in health care delivery. The new health care financing policies of the 1960s challenged the hospital with broad changes in reimbursement, requiring more complex documentation and billing procedures. The advent of the Medicare and Medicaid programs required more financial and administrative personnel to implement the complex regulations, even as it turned formerly non-paying patients among the poor and elderly into paying ones. These changes put pressure on specialty hospitals to close or centralize services. In 1960, RBBH President Howard Gambrill Jr. wrote, "The position of a small specialty hospital standing alone appears to grow steadily more precarious" (Robert B. Brigham Hospital 1961, 7).

Despite all of the achievements at the RBBH, survival was a real concern. At the Robert and at other area institutions, the reason was simple. The costs of the personnel needed to provide full services, in addition to costs associated with the maintenance and expansion of the physical plant to accommodate patient care and the burgeoning research programs, exceeded what could be recouped from patient revenues and grants. Again in 1961, talks of a merger resurfaced when a group was formed to develop its objectives. Even as the hospital enjoyed a 50th anniversary celebration in 1964, its administrators were attending meetings about a merger.

Ambulatory care of children with arthritis

Ambulatory care for children was added in 1963 when a Clinical Treatment Center for Juvenile Rheumatoid Arthritis was organized by Stillman and Joel C. Goldthwait. This, in combination with the inpatient pediatric program started earlier, became the first prototype of centers of specialized care for childhood rheumatic disorders. The inspiration for the clinic came from Stillman's experience caring for a young Swedish girl with inflammation in almost every joint. He became aware of the need for comprehensive care and the importance of studying the life course of the childhood rheumatic diseases, given the absence of data on their treatment and long-term consequences.

Fortunately, the National Foundation for Infantile Paralysis, later known as the March of Dimes, was looking for a new focus, since the polio vaccine had been discovered. Money became available for a crusade against childhood arthritis. Stillman was approached by the Foundation and he persuaded them to fund the clinic, where the course of childhood forms of arthritis could be monitored by systematic follow-up. In 1965, the Arthritis Foundation took over the support for the juvenile rheumatoid arthritis (JRA) clinic.

The clinic was designed to provide comprehensive patient care, since rheumatic disease was a systemic disorder, involving the joints and affecting all aspects of the patient's life. Its course was that of a waxing/remitting chronic condition. In many cases, it affected multiple organ sys-



An outpatient center for children with juvenile rheumatoid arthritis opened in 1963.

tems in addition to the joints, and it was often accompanied by emotional problems. The medical specialties required to deal with these problems in the clinic included rheumatology, ophthalmology, orthopedics, pediatrics, rehabilitation, and psychiatry. The ophthalmologist checked the patients' eyes regularly to diagnose asymptomatic uveitis which could cause blindness. Clinicians from physical and occupational therapy followed most of the children until they were adults.

A child with JRA coming to the clinic for the first time would be hospitalized for five days for tests and a thorough evaluation. Data from this examination, along with information gained at yearly follow-up exams, were recorded for hundreds of patients and form much of what is known today about the natural history of JRA. The Center, like other activities of the Robert Brigham, was both a place for comprehensive, coordinated care and a laboratory for learning about disease and evaluating its treatments.

Leadership transitions

It was during these years that the RBBH saw the passing of the “old guard.” Founder Joel E. Goldthwait passed away, as did Lloyd Brown and Loring Swaim. Theodore Potter (1912-1995) became chief of orthopedics, succeeding John Kuhns. New physicians joined the staff, including Peter Barry, Donald Holdsworth, and Edward Nalebuff. These would be among the clinical stalwarts who would usher the hospital into the modern era of rheumatology.

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Rehabilitation and Nursing Care for People with Rheumatic Disease Matures

As the hospital continued to weather financial storms and to recruit talented people devoted to its specialized mission, the seeds of multidisciplinary care and collaboration that had been established by founder Joel E. Goldthwait continued to blossom. Nursing and allied health professionals specializing in rheumatic diseases came into their own, with the development of rehabilitation services being particularly noteworthy.

The growth of rehabilitation services

Physical and occupational therapy were reorganized by the founder's grandson, Joel C. Goldthwait, who helped establish a systematic rehabilitation focus and team approach. In 1955, Goldthwait and Wallace Fletcher of the Bay State Society for the Crippled and Handicapped received a grant from the United States Office of Vocational Rehabilitation to study rehabilitation methods and techniques. (The three-year funding was stopped in late 1957 because the government funding agency thought the study was under-enrolled. Despite this, the project was continued temporarily on a reduced basis.) Occupational therapy started new programs, some of which would amuse us today. For example, a modern dancer, bringing finger cymbals, a xylophone, and musical recordings from marches to mambos, encouraged patients to "dance in bed" as a way to actively participate in their rehabilitation. The department also initiated group physical therapy and group vocational guidance. However, even as the hospital's rehabilitation services continued to evolve and grow, the major schools of rehabilitation devoted little



Rehabilitation specialists at the Robert Brigham crafted and customized a variety of assistive devices to improve function in people with arthritis.

time in their formal curricula to systemic rheumatic conditions (Jette and Becker 1980; Liang and Logigian 1992). This meant that the Robert Brigham therapists often had to develop their own techniques and expertise to solve patients' problems and also had to evaluate their clinical effectiveness.

Comprehensive pre- and post-operative care routines designed to maximize rehabilitation after surgery were adopted. Patients were admitted one or two days before surgery for physical therapy and occupational therapy evaluations, and for instruction in post-operative exercises. Patients with severe joint damage who were wheelchair- or bed-bound, were admitted well in advance of surgery for stretching of the soft tissue contractures that could impede post-operative rehabilitation. Early admissions also allowed for stabilizing patients with complex medical conditions and screening for infections.

Occupational and physical therapists worked with patients in the early post-operative period, helping them with functional activities and

fabricating individualized assistive devices for independence in eating, grooming, dressing, and walking. Until the 1980s, most assistive devices were not commercially available; an occupational therapist would have to be a designer, carpenter, and tailor.

The Robert Brigham's reputation for comprehensive rehabilitation care became well established during these years. In 1971, the Bay State Medical Rehabilitation Clinic, a separate entity at the Massachusetts General Hospital that had been started by Augustus Thorndike Jr. – a graduate of Harvard Medical School (class of 1921) and an orthopedic surgeon during World War II who was an advisor to the Surgeon General – agreed to a voluntary dissolution of its holdings by turning over all its funds and property, valued at \$54,097, to the Robert Breck Brigham Hospital because of its reputation for rehabilitation.

Rehabilitation clinicians

The hospital attracted and nurtured a talented pool of clinicians who would become rehabilitation specialists in rheumatic disease. Marie Weafer (Marie Weafer Hodgins) (1936-2010) came to the Robert Brigham in 1967. Growing up on the “Rise” of affluent Dublin, she began the life of a debutante but dreamed of being a physician. However, her father did not think it was proper for young ladies to go to medical school. Weafer trained in physiotherapy at University College Dublin. She specialized in the rehabilitation of the neurologically impaired, caring for patients in the Irish Army and at the Beaumont Hospital in Dublin, before going to the renowned Rusk Institute in New York in 1965.

On a visit to Ellen Russell, a friend from the Beaumont Hospital who was a nurse at the Rob-



Marie Weafer in 1967

ert Brigham, Weafer became fascinated with what could be done in the treatment of arthritis patients. The staff of the Robert recognized a therapist who was enthusiastic, compassionate, and skilled, and offered her a job. She became part of the fabric of the RBBH, and later the Brigham and Women's Hospital, and was still a practicing clinician in 2010 when she died suddenly from a stroke.

Weafer was one of the very first therapists licensed in Massachusetts. She and Betty Robinson, an occupational therapist, worked closely with Sydney Stillman in the juvenile rheumatoid arthritis clinic and saw hundreds of children grow into adulthood and have children of their own. The treatments they created profoundly changed the very idea of medical care for an enormously neglected group of disorders. Patients no longer received a disability sentence; instead, they were given an affirmative, active treatment program. Weafer and her colleagues in physical and occupational therapy did for the rehabilitation of such individuals what modern science has done for the medical and surgical treatment of inflammatory arthritis.

A teacher and mentor, Weafer's influence grew as the hospital became a magnet for students in rehabilitation. She formalized the training program for physical therapy students, planned educational programs for the staff, and coordinated rheumatology and orthopedic continuing education seminars for both physical and occupational therapists locally, nationally, and internationally. Like many teachers, she was a curious student and a life-long learner; in her 70s, she took courses at Suffolk Law School.

Weafer could spot a colleague from far away and always had time to check in with their lives. She seemed to have an Irish saying for almost any topic that would come up. Her Irish brogue was not always understandable to the new staff as she breathlessly gushed information and anecdote, but colleagues found her counsel more understandable and poignant the longer they worked with her. If ministering to the ill was not enough, in the remaining hours of the day she was involved in many causes – Catholic Charities, her elderly neighbors, animals, the Arthritis Foundation, and homeless shelters, to name a few.



A nurse applies a “serial cast,” designed to reduce knee contractures resulting from chronic inflammatory arthritis.

Patients with inflammatory disease of the wrist and fingers would dip their hands in paraffin baths. The heat would penetrate the joints, helping to increase mobility and decrease pain.



A patient uses a long-handled comb to comb her hair.

Although Weafer was the “go-to” therapist for the rich and famous of Boston and the medical elite of the community, she seemed most comfortable with the difficult and complicated patient. She took as much time as was needed to do things right, squeezed in new patients if one only asked, came before and left after everyone else, and, whenever possible, did so with a cup of tea in her hand.

In 2003, the Association of Rheumatology Health Professionals, a division of the American College of Rheumatology, honored Weafer with the first Master Clinician Award in recognition of the impact she had had on generations of young physical therapists, countless patients, and the profession itself.

The environment attracted other top-notch professionals, many of whom were leaders and innovators in the evolving field. Richard Quigley was the director of physical therapy in 1973 when he set up a novel program that provided rehabilitation coverage for post-operative patients twice a day, seven days a week. The idea of continuity of care was built into the new program, through which patients would see the same two physical therapists during their entire hospitalization. The unique program, also adopted at the Hospital for Special Surgery in

New York, was modified considerably under the fiscal pressures on hospitals in the 1980s (Liang et al. 1987).



Physical therapist Victoria Gall treating a patient in the 1970s

Victoria Gall, a physical therapist who also had a master's degree in education from Boston University, was particularly interested in ankylosing spondylitis. This condition tended to affect the spine, which sometimes left the patient in a hunched-over position. Inspired by eight months spent at the Royal National Hospital for Rheumatic Diseases in Bath, an ancient

Roman spa town in England, she developed special programs for these patients. She also helped set up the National Arthritis Foundation's standardized land exercise and pool programs. After the merger that created the Brigham and Women's Hospital, Gall was also a research associate in the Robert B. Brigham Arthritis and Musculoskeletal Disease Clinical Research Center (see Chapter 11). In 2011, she received the Association of Rheumatology Health Professionals' Master Clinician Award.

Betty Robinson graduated from the University of Vermont as an occupational therapist and worked her entire career, from 1958 to 1988, at the Robert Breck Brigham/Brigham and Women's Hospital. She was the director of occupational therapy for part of that time, and performed key functions in the Juvenile Rheumatoid Arthritis Clinic, including being among the first clinicians to standardize hand joint measurements to document the course of each child's hand involvement and function. She was a creative problem solver and designer of assistive devices and splints. Jeanne Melvin became the director in 1977. In 1973, Melvin received the first fellowship granted by the Association of Rheumatology Health Professionals and the Arthritis Foundation. She authored the first occupational therapy textbook focusing on rheumatic diseases (Melvin 1977).

Margaret Martineau (1920-2007) was a physical therapy supervisor at the RBBH from the early 1960s until the hospital's move to the merged Brigham and Women's Hospital. She decided to retire rather than move "down the hill" because she thought she was "too old for that type of change." Martineau was grandfathered into the physical therapy profession, as her training was in physical education/therapy, but not from a college program. Prior to joining the Robert Brigham, she worked in a private orthopedic office. She was a colorful figure, and tough. Many of the doctors quivered when she marched toward them



"When they were admitted, they couldn't get out of the wheelchair because their knees were bent at a right angle. Hot packs and rest and exercise were used: they were and are very important. You often found out a great deal about people by getting them out of their environment and into a different situation."

The Robert Breck Brigham Oral History Project

with questions, but they had great respect for her and sought her advice in planning surgery and rehabilitation for difficult cases. She smoked with her feet on the table and referred to younger staff as “the kids.” She once crafted a wheel-based device so that her paralyzed dog could walk!

Janice (Sutkowski) McInnes joined the physical therapy staff in 1976 and became one of its senior supervisors. An expert clinician, she also coauthored one of the first controlled studies on the use of continuous passive motion machines (CPM) following total knee arthroplasty (McInnes et al. 1992).

Thomas Gagliardi first joined the occupational therapy staff in 1978 as a certified occupational therapy assistant. Prior to coming to the RBBH, he had been in the military and had also worked at Boston’s Long Island Hospital for Chronic Disease, located in Boston Harbor. He was an expert in making adaptive equipment and this skill helped him become an orthopedic technician in the mid 1980s.

The rehabilitation staff’s legacy was carried on by individuals such as Martha Logigian, an occupational therapist who became a director of rehabilitation services at the Brigham and Women’s Hospital. She helped ensure ongoing excellence in rehabilitation following the merger. She wrote a book on the rehabilitation of early rheumatoid arthritis and edited several texts on rehabilitation management for occupational therapists (Liang and Logigian 1992; Logigian 1981; Logigian and Ward 1989; Jacobs and Logigian 1999). Maura Iversen, a student of Marie Weafer, was a staff physical therapist whose early research experience included work in the US Post Office as part of a study being carried out by the Robert B. Brigham Arthritis and Musculoskeletal Disease Clinical Research Center (see Chapter 11)(Daltroy et al. 1997). She went on to become one of the field’s most highly regarded researchers, teachers, and mentors.

Nursing

With the closing of the School for Attendant Nurses in 1951 and a national nursing shortage continuing, the Robert Brigham was challenged to fill nursing positions. However, the hospital’s location in Boston and

favorable pay scale made it an attractive option for what nurses were available. In addition, the construction of one-story brick apartments for nurses, known as the “Brigham Village,” had a twofold benefit. It addressed the general housing scarcity that was an issue after the war, and it created a sense of cohesiveness among RBBH nurses that lasted many years.

The hospital’s need for nurses was also helped by an affiliation with Simmons College and by the recruitment of foreign nurses. In the early 1960s, Howard Gambrell Jr., the hospital president, hired an agency to recruit nurses from Ireland and England – a practice that was occurring at other hospitals in the area as well. Recruiters from the agency went to Ireland, accompanied by Rita McDonough, director of personnel at the RBBH. They placed advertisements in the newspapers and gave slide shows to potential staff. Miriam Walsh, who came to the Robert Brigham in 1964 and who was a head nurse at Brigham and Women’s Hospital until her retirement, gave a common story:

My younger brother was here and I wanted to see how he was doing. But I think primarily it was just that it was a new place and we were at that age where we wanted to travel, and it was a way of earning a living while traveling. Of course the pay scale was much higher than in England or Ireland. (Walsh, personal communication)

To make the new nurses feel at home, a Robert Brigham nurse would meet them at Logan Airport, take them to dinner, and bring them back to Brigham Village. After the first nurses from Ireland were recruited, they persuaded their friends and relatives to join them.

The Irish nurses had a strong personal commitment to helping disabled and chronically ill patients and added a unique character to the institution and patient care. In the 1980s, interviews were conducted with some of these nurses. Their names are not recorded, but their comments give a flavor of the cohesiveness of the nursing community at the time.

Four of us Irish nurses came together...we all had return tickets. But I stayed and here I am 30 years later. We arrived at the Robert Brigham at about 10:30 at night. I had to meet

the nursing supervisor, who was a lady by the name of Hazel Potts. She had a dress like Florence Nightingale would wear; her dress was down to her ankles...She took us over to the Brigham Village and introduced us to the people in each little apartment. We started work the next day; there was no orientation in those days.



I worked on West 2, under Mrs. Glode. Margaret O'Leary was the director of nursing at that time. She was a fantastic lady, very supportive. She had wonderful coiffed hair done in a French twist...Fergie [Miss Ferguson] was on nights. She was exactly like the matrons or supervisors that we had back in Ireland.



We had several Canadian nurses. Alice Sutherland was one of them. She was a magnificent person. I never heard her raise her voice or say an unkind thing about anybody.



The head nurses were pretty remarkable in their own right. Polly [Margaret] O'Leary was Mrs. Glode's best friend, and they lived in the village. They had a Dalmatian named Penny. In the village, we had a little multinational culture, with different nationalities – Irish, American, English, Canadian – and different generations. We had parties and sing-a-longs... many of us met our husbands while living in the village. I'll always remember sitting outside in 1967. The Red Sox were winning and you could hear the cheers up on Mission Hill. You could see the lights in Fenway Park from where we were sitting.



I think that the role of the nurse has changed dramatically from the time I came here. The role has changed from someone who is task-oriented to someone who is actively involved in assessing and problem-solving. In the old days you just knew what you had to do and you did it – like giving baths and getting them out of bed. We never really went beyond

what was wrong with the patient. Today we are much more conscious of the whole picture – of looking beyond the disease. Nursing is much more sure of what it is doing as an autonomous profession.



Giovanna Franchi (1915-1980), an Italian immigrant, was another notable nursing personality. She worked at the RBBH before World War II and served in the US Army. She was stationed in the United Kingdom during the war. She then returned to the Robert for another 20 years. She worked in the outpatient clinic when it opened in 1956 and eventually became the director of the consultation clinic before she died of cancer. Dr. Ronald Anderson recalled her as “a totally devoted, tremendously talented person” (Anderson, personal communication).



Giovanna Franchi

He also wrote the caption accompanying her portrait at the hospital:

She was the first to arrive, last to leave, and administered meds, directed a staff that tripled upon her death in an attempt to replace her, triaged patients, guided young trainees, and was a model of skill and sensitivity. Her legacy is a dedication to excellence, compassion for the individual, and an ability to comfort the frightened and the ill. She made things better.

During President Lyndon B. Johnson’s era, from 1963 to 1969, the recruitment of overseas nurses declined because of immigration quotas. Although some nurses who came to the Brigham returned to Ireland, others like Josie Madden, Mary Dugan, Eileen Russell, and Miriam Walsh stayed on to see the assimilation of the Robert Brigham into Brigham and Women’s Hospital.



In this 1964 photo, nurse Gertrude Glode and Bozo the Clown help a young patient cut her birthday cake.

Outstanding nurses were not limited to those who trained overseas. Gertrude Glode graduated from the Lawrence Memorial Hospital School of Nursing in Medford, Massachusetts in 1939 and joined the RBBH staff in 1951. She retired as head nurse of rheumatology and orthopedics in 1981. In the 1930s, when Glode started nursing, women's professional options were limited. She followed her older sister's example and went into nursing, and remembered how glad she was to be in training at a time when everybody was out of work. The nursing program she attended ran three years straight with about two weeks' vacation yearly. The day began with a clothing inspection at 6:45 am and lasted 12 hours. When students were not in class, they worked at the Lawrence Memorial Hospital. The training included the basics of how to make beds, clean rooms, and give back rubs. For her efforts, Glode received a stipend of \$6 a month. She got \$2 to cover her transportation home. If she broke any equipment during her work, the replacement costs would be deducted from her pay. Talking about the old Robert Brigham, Glode noted:

When patients from the west wing were taken to the operating room, they had to cross through the open bridge. In win-

ter, first the patient was carefully wrapped with the outside blankets tucked in, and soft blankets cuddled around their head and shoulders. The two nurses and the bed paused at the door while the nurses climbed into their galoshes, tossed on their heavy overcoats, hooked the doors open, and made the Siberian journey across the blustering windy wasteland. Dr. Zhivago had nothing on them! Sometime during Mr. Altman's tenure, the bridges were enclosed. (Glode, personal communication)

Following her retirement, Glode volunteered at the Brigham and Women's Hospital for many years, helping to run the patient library, visiting patients, and working for nursing administration.

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The Austen and Sledge Era

During the 1960s and 1970s, the comprehensive care of patients with systemic rheumatic diseases was fully realized under the leadership of two figures whose appointments proved to be among the most important in the hospital's history. K. Frank Austen was appointed physician-in-chief in 1966, and Clement B. Sledge was named surgeon-in-chief in 1970. These inspired leaders continued and expanded the tradition of multidisciplinary, comprehensive care that had been established by their predecessors. In addition, they drew on their colleagues at other Harvard teaching hospitals – particularly the Peter Bent Brigham – to bring the expertise of additional medical specialties to the little hospital on the hill so patients with complicated multisystem rheumatic conditions could have all their problems and needs addressed.

K. Frank Austen

Austen was 38 years old when he was appointed physician-in-chief. The appointment marked the first time in the hospital's history that someone would hold this position on a full-time basis. It had become increasingly difficult for part-time staff to lead patient care, teaching, administration, research, and fundraising. The year after Austen's appointment, a freestanding rheumatology and



Dr. K. Frank Austen

immunology department was established at Harvard Medical School. When first formed, the department had five postdoctoral fellows along with seven part-time and four full-time faculty.

Austen's leadership spanned decades and continues to this day. He served as physician-in-chief at the Robert from 1966 until the hospital merger in 1980. In 1972, he was named the first Theodore B. Bayles Professor of Medicine at Harvard Medical School. (The Bayles chair was established by the grateful patients of Dr. Bayles. The story has it that one patient in particular credited Bayles for recognizing serious side effects of a medicine, allopurinol, which had been prescribed by another physician. Bayles stopped the medicine and the patient got better.) Austen served as chairman of the Department of Rheumatology and Immunology at Brigham and Women's Hospital from 1980-1995, and in 1995 was named director of the Inflammation and Allergic Diseases Research Section of the hospital's Division of Rheumatology, Immunology, and Allergy. In 2001, he was named the AstraZeneca Professor of Respiratory and Inflammatory Diseases at Harvard Medical School.

Austen was an immigrant's son. His father had emigrated from Czechoslovakia at age 34 to run the new Goodyear-Zeppelin organization in Akron, Ohio. The elder Austen oversaw the construction of what was at that time the largest building in the world without interior supports – the Goodyear Airdock, where the 785-foot-long zeppelin, *USS Akron*, was built (Becker 1989, Drazen 2004).

Frank Austen had a fairly uneventful youth until just before going to college. He had wanted a college where he could play football, but his counselor told him he was too small and suggested a liberal arts college like Amherst, Williams, or Wesleyan. Austen didn't know these schools but wanted to go east. He picked Amherst and was accepted. The summer before matriculating, he worked as a lifeguard at a Lake Erie camp but then came down with polio and was admitted to Akron Children's Hospital with paralysis. It never occurred to him that he would not get well and he was fascinated by what he saw in the hospital. The resident in pediatrics who did his lumbar punctures became a good friend. By December of that year, he was able to move. After discharge, he slowly regained his strength except in one shoulder.

He entered Akron University, took a few classes, then transferred to Amherst where he graduated Phi Beta Kappa in 1950 with his original class (Drazen 2004).

He was accepted into Harvard Medical School (class of 1954) where his brother, Gerald, was admitted a year later. During his last year in medical school, Austen took an elective month in rheumatology with the charismatic, chain-smoking chief of medicine at the Massachusetts General Hospital (MGH), Walter Bauer (1898-1963). Bauer had spent six months at the Robert Brigham during his own training and was to mentor many twentieth-century leaders in rheumatology including John Decker, Edward Harris, Nathan Zvaifler, John Baum, Joseph Levinson, Virgil Hanson, Claude Bennett, and Marian Ropes. Austen and Bauer formed a lifelong friendship – one that would prove influential in the direction of Austen’s career (Drazen 2004). When



Photo taken on the occasion of Dr. K. Frank Austen’s installation as physician-in-chief, dated June 20, 1966. Shown from left are Austen; Dr. Robert Ebert, dean of Harvard Medical School; F. Stanton Deland, president of the Affiliated Hospitals Center (joint venture of Boston hospitals that would become the Brigham and Women’s Hospital); and George W. Kuehn, president of the Robert Breck Brigham Hospital Board of Directors.

Bauer developed pulmonary failure from emphysema, Austen ministered to him during his terminal illness.

Before graduating, Frank and his brother Gerald talked about their future plans. Frank later recounted that Gerald had said, “You know, we’re pretty competitive. We shouldn’t do the same thing. You decide whether you want to be a medical person or surgical person and I’ll do the other” (Rachelefsky 2005). Frank decided on medicine and Gerald on surgery. Both went to the MGH. Frank eventually became chief resident in medicine; Gerald became chief resident in surgery and, eventually, chief of surgery.

Frank Austen finished his internship at the MGH in 1955 and was about to go on vacation when a polio epidemic hit New England. The victims were sent to either the John C. Haynes Memorial Hospital, the infectious disease hospital in Brighton, or to Boston City Hospital, and both filled up quickly. The MGH decided to take polio patients and Bauer asked Austen if he would forgo vacation and take care of polio patients with another assistant resident, Jan Koch-Weser. The MGH admitted hundreds of patients and the two became experts.

The MGH had little experience in polio, so the chief at the Haynes mentored Austen and Koch-Weser on a weekly basis. There were so many patients requiring iron lungs that the MGH turned an entire floor in the White Building over to polio, with the two men alternating days caring for them. The patients without respiratory system involvement went to the neurology service. The two physicians, and especially Austen who had had polio himself, found caring for such young, seriously ill patients quite stressful emotionally.

Austen made an important discovery in caring for polio patients (Austen, Koch-Weser, and Field 1956). Patients had been dying from low blood pressure while in the iron lungs. When they were near death, they would be taken out of the iron lung and ventilated by hand. Austen noted that when this occurred, they would pink up and look better. Then when they were put back in the iron lung, their oxygenation and blood pressures would again fall to dangerous levels. Austen was able to show that by intubating the patient and using an oxygen mask

and positive pressure ventilation, the low oxygen and low blood pressure levels could be avoided (Drazen 2004). Practice at the MGH changed as a result of Austen's discovery, and polio patients stopped dying of shock.

At the completion of his residency, Austen joined the army. Bauer contacted the chief of medicine at Walter Reed Army Medical Center, Thomas Mattingly (1907-1999), to see if Mattingly could facilitate an assignment there, suggesting that Austen be made head of rheumatology after his basic training. However, when Austen was ready for transfer, Mattingly (who had trained in cardiology under Paul Dudley White [1886-1973] at the MGH) was away tending to President Dwight Eisenhower, who had had an acute heart attack. On examining Austen's experience, and noting that he had papers published in the *New England Journal of Medicine*, Austen's supervisor at Fort Sam Houston thought research was a logical next step and sent him to work with Elmer Becker on the complement system (part of the body's innate immune system) at the Walter Reed Army Institute of Research (Drazen 2004, Rachelefsky 2005).

Becker was to have a profound influence on Austen's scientific development. After several months working with Becker, Austen finally met Mattingly who wanted him as a rheumatologist. Austen pleaded to continue his research and to see the rheumatology consults at night, and Mattingly acquiesced (Drazen 2004).

At Walter Reed, Austen had become interested in the work of John Humphrey (1915-1987) at England's National Institute for Medical Research in London on the biochemistry of acute allergic reactions. After Austen's discharge from the service, he got a position there with Walter Brocklehurst. Brocklehurst had just showed that a substance released in the guinea pig lung during anaphylaxis (a severe allergic reaction) could cause constriction of the small lung passages (bronchioles) of both guinea pigs and humans. The constriction could be quickly reversed by adrenaline. Identifying the constricting substance and learning about its release, its biochemistry, the molecules involved, what cells produced them, and how they could be regulated was to occupy twenty years of Austen's life (Drazen 2004).

After England, Austen returned to MGH to be chief resident in medicine. He then went to Johns Hopkins University for six months to work with Manfred Mayer (1916-1984) and learn immunochemistry. He returned to MGH and set up a laboratory in infectious disease. In 1964, Robert H. Ebert (1915-1996) became chief of medicine at MGH and named Austen head of the hospital's pulmonary unit (Drazen 2004). When Ebert became dean of Harvard Medical School, he felt that immunology research had tremendous translational potential with direct benefits to clinical care. Ebert persuaded Austen to move to the Robert Brigham to develop an immunology program and to be the physician-in-chief (Austen 2008, Rachelefsky 2005).

As chairman of a diverse and complicated organization with many foci of activity, Austen was highly effective and known for his tough-mindedness, exacting standards, and keen sense of institutional workings. One could feel the pulse quickening when he presided over meetings or made his incisive, methodical, and persuasive arguments, punctuating key points by clearing his throat. He was highly organized and logical and expected others to be the same. Once, during a site visit where funding from the National Institutes of Health was to be decided by visiting reviewers, he demanded that reviewers who had left the room return so that they could all hear the presentation. He typed all his own patient notes and correspondence. Never one to back away from challenges, including physical ones, he once sustained a serious compound leg fracture in a skiing accident in Europe and directed his own air evacuation back to Boston so that his orthopedic colleagues could care for him. With the injury came damage to a nerve; his therapist fashioned a resistive training device he could pedal at his desk to strengthen his leg muscles. Outside of work, Austen was devoted to his family, active in politics in the town of Wellesley, Massachusetts, a highly competitive town youth soccer coach, a collector of Japanese woodcut prints, and an avid gardener.

Over ninety of Austen's students became professors or achieved an equivalent rank at other research institutes and they trained hundreds of investigators each. His success as a teacher and mentor was no doubt related to his penchant for asking important questions and

Sayings of K. F. Austen

- You only get an A for effort in kindergarten.
- Scientists are expendable, it's the data that counts.
- Do it sooner rather than later.
- Don't mow the lawn when you hear the grass grow.
- If you slept last night, you had time to do the experiment.
- If it doesn't dose response, it's not science.
- For problems with collaborators, tell them that you will make them famous.
- Cut out the editorials and just give the data.
- Anything other than actually doing the experiment is only wishful thinking.
- You can't take refuge in other people's problems.
- Don't take any vacations.
- Don't answer a question I didn't ask.
- Just stop talking and show me the data.
- No arguments, however strong, replace experimental data.
- There is nothing physiological about any experiments we do.
- There is no relationship between quality science and fame, as far as I can best tell.
- You are never going to answer the question by not doing the experiment.
- A little information is a lot more useful than a long discussion of things that we are wrong about.
- In God we trust, all others bring data.
- Think about research in terms of decades, not fashions.

requiring his trainees and colleagues to answer them as incisively as possible. His staff sometimes commented that they found his weekly laboratory meetings more demanding and rigorous than talking before hundreds of colleagues at national meetings. As is the case with many strong teachers, his students – even years after going their own way and attaining distinction – still sought his advice and his approval. His aphorisms became their guideposts, sometimes appearing on t-shirts created by students and others he mentored (see sidebar).

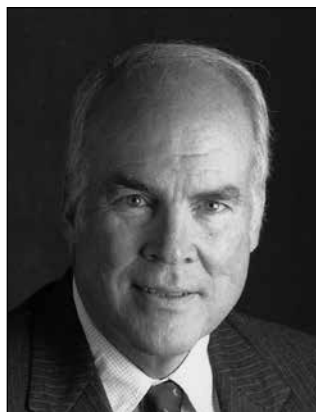
Austen's impact on science was immense. A complete description of his work and that of his colleagues would be a treatise in itself, and one can only give a sketch. Over the years, Austen and his team worked out key mechanisms of allergy and inflammation that form the basis of our current understanding in these areas. (Descriptions of some of this work appears in Chapter 8.)

Austen's awards and distinctions fill pages. The remarkable record was due to the fact that his discoveries were at the most basic level of human biology and disease, and they advanced knowledge in rheumatic diseases, dermatology, allergic disorders, lung diseases, immunology, and infectious diseases. In each of these areas, Austen received the highest accolades and recognition. Among these are induction to the prestigious and elite American Academy of Arts and Sciences, the National Academy of Sciences, and the European Academy. He received the American College of Rheumatology's Distinguished Investigator Award, the Lee C. Howley Sr. Prize for Arthritis Research, and the American Thoracic Society Award for Scientific Accomplishments. He is one of a very small number of Americans to have been elected to the Royal Society of Medicine – the society of Sir Isaac Newton and Charles Darwin.

Clement B. Sledge

Austen's counterpart in surgery, Clement Sledge, attracted top-notch talent in orthopedic surgery to the Robert Brigham, creating an environment that allowed patient care, research, and medical education to flourish.

Sledge was born in Ada, Oklahoma and graduated from the University of the South and from Yale Medical School. He trained in general surgery at Barnes Hospital at Washington University in St. Louis and for two years was a navy ship surgeon on the *USS Macon*. He trained in orthopedics at the MGH and Children's Hospital Boston before becoming chief resident in orthopedic surgery at the MGH. He then studied orthopedic pathology at the Armed Forces Institute of Pathology in Washington, DC, and



Dr. Clement B. Sledge

spent three years as a graduate student in biochemistry at the Strangeways Research Laboratory at Cambridge University in England before returning to the MGH, and then the Robert Brigham and Peter Bent Brigham in 1970. He recruited surgeons Frederick Ewald, Robert Poss, Richard Scott, William H. Thomas, and his eventual successor, Thomas Thornhill, and built an orthopedic research laboratory. Sledge was named the John B. and Buckminster Brown Professor of Orthopedic Surgery – an historic chair held by other prominent orthopedic surgeons at Harvard including Robert Williamson Lovett, Robert Bayley Osgood, Frank Roberts Ober, and Joseph Barr. At the time of Sledge's appointment, surgery at the hospital was dominated by Theodore Potter and Marvin Weinfeld. James Drennan Lowell (1922-1987) led orthopedics down the hill at the Peter Bent Brigham Hospital.

Sledge was a gifted, widely-read, garrulous, social person, and a charismatic, extemporaneous speaker who always had the perfect story or fact to illustrate his points. He was known for his gift for "getting out the word." At site visits where funding from the National Institutes of Health was on the line, he would be carefully rehearsed by his nervous handlers but usually deviated from the script, with better results. One of his protégé's, Robert Poss, said of him, "He was a shining light, had a golden tongue and presence, and put the department at the Robert

Brigham on the map” (Poss, personal communication). His colleagues often joked that Sledge could give their talks better than they could, and often with their slides.

When Sledge, an orthopedic surgeon, was selected as surgeon-in-chief at a hospital whose only surgical specialty was orthopedics, a unique and important milestone was achieved. The distinction helped mark the true beginning of orthopedic surgery as a specialty that was separate from general surgery. When Joel E. Goldthwait established the early orthopedic services at the Carney Hospital and then at the Massachusetts General, there was no formal specialty of orthopedic surgery. Orthopedic procedures were done by general surgeons and consisted of the closed treatment of fractures, drainage of bone infections, and amputation of limbs. Broken bones were also set by general practitioners (Mankin 2000). The first orthopedic surgeons, such as those at the early RBBH, fell into the job that no one else wanted. They provided general medical care for handicapped people, treated neurological problems, cared for polio victims, did soft tissue surgery, and set broken bones. In the early days of the RBBH, a surgeon could come in and operate at eight in the morning and then leave, meaning there wouldn’t be any orthopedic surgeon in the hospital. When the house staff from the Peter Bent Brigham Hospital began rotating through the Robert Brigham in the 1940s, real orthopedic coverage began. Perioperative care improved dramatically, especially with regard to rare operative complications such as acute pulmonary embolism and acute myocardial infarction.

Sledge presided over one of the truly golden periods of orthopedic surgery, both in Boston and worldwide. His tenure saw the unification of orthopedic surgery at the Peter Bent Brigham and Robert Breck Brigham Hospitals under a single Harvard Chair in Orthopedic Surgery. He led a team of surgeons who became major players in the advent of joint reconstructive surgery, and he built a program of international renown. Among its many contributions would be the maturation of knee replacement surgery, radiation synovectomy, and systematic tracking of the long-term results of total joint arthroplasty in a joint registry. (More information on Sledge’s work appears in Chapter 9.)

Realization of comprehensive care

As knowledge regarding the scope and natural history of numerous rheumatologic conditions grew at the Robert, so did the appreciation of how these conditions affected multiple body systems, and the understanding that a broad range of specialists was needed to provide truly comprehensive care. Austen and Sledge recruited and nurtured such expertise to care for RBBH patients. All this was done as “one-class care;” former distinctions between private patients and those who could not afford care were eliminated. Two outpatient units – the home service department, which cared for patients who could not afford to pay, and the consultation clinic, for paying patients – were combined into the ambulatory clinic. Visits to the new clinic mushroomed from 8,000 in 1972 to 20,000 visits in 1980.

The physicians who walked up the steep hill through the Mission Hill community from the Peter Bent Brigham to consult on the rheumatic disease outpatients or hospitalized patients would make unique clinical and scholarly contributions from the prism of their own specialties. The consultations often became the focus of their life’s work and, at times, gave rise to previously undefined subspecialties. They enriched the teaching environment and improved the capacity of the hospital to effectively and comprehensively care for its patients.



A family waiting for an appointment in the ambulatory clinic at the Robert Brigham, circa 1960

Ophthalmology

Ophthalmology was brought to the hospital in 1972 by Leo Chylack, Donald Bienfang, Edward Ryan, Bob Bellows, Dave Campbell, and Christine Burns. They were essential specialists for the diagnosis and



Dr. Donald Bienfang

management of the inflammatory eye manifestations of rheumatic conditions such as rheumatoid arthritis, systemic lupus erythematosus, Behcet's disease, Sjogren's syndrome, juvenile arthritis, giant cell arteritis, systemic vasculitis, spondyloarthropathies, and psoriatic arthritis. Patients receiving anti-malarial drugs could develop retinal complications, and those on steroids might develop cataracts or glaucoma, leading to visual loss.

Chylack began the annual eye evaluations of children with arthritis because these specialized exams could detect asymptomatic inflammation that could affect vision.

Bienfang was a brilliant clinician trained in internal medicine, neurology, and ophthalmology. He did the first temporal artery biopsy at the hospital and had a major interest in hydroxychloroquine retinopathy and giant cell arteritis. He made important observations and contributions to the understanding of the clinical course of these diseases (Bienfang 1984).

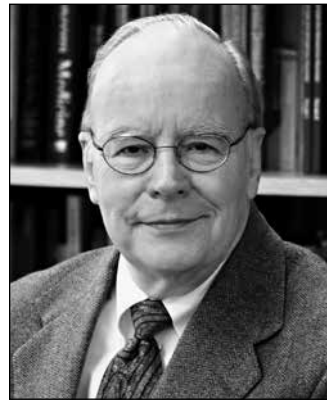
Hematology

Clinicians from the hematology program at the Peter Brigham provided special expertise in the care of the Robert Brigham patients. This was led by W. Hallowell Churchill for most of the 1970s. He saw a variety of clinical problems, such as nutritional anemias caused by iron deficiency from gastrointestinal bleeding, disturbances of iron metabolism from underlying inflammatory conditions, and anemia from folate acid deficiency. Also, many drugs used in the control of the systemic rheu-

matic diseases could adversely affect red blood cells, white blood cells, or platelets. These included such agents as high-dose aspirin and corticosteroids, as well as the non-steroidal anti-inflammatory drugs that caused gastric irritation or bleeding, and gold salts and cytotoxic agents that could cause bone marrow suppression.

Dermatology

Dermatology was also an important subspecialty for patients with systemic rheumatic conditions and also provided a focus for some of the laboratory research at the hospital. The skin could manifest specific clues of certain diseases and could be a major site for primary inflammatory or allergic conditions. Skin disfigurement could sometimes occur, such as in discoid lupus. The drugs used in the treatment of rheumatic disorders themselves could cause pigmentation disorders or allergic manifestations. All of these had to be diagnosed and treated. Physicians with dermatology training were important laboratory collaborators with Austen and also provided their clinical expertise. Dermatology specialists at the RBBH during this era – many of whom went on to national prominence in their field – included Irma Gigli, Nick Soter, Bruce Wintrobe, and Harley Haynes. Haynes had first seen patients at the Robert Brigham as a dermatology resident from 1968 to 1970. He



Dr. Harley Haynes

then went to the MGH and to the Peter Bent Brigham in 1976, where he saw Robert Brigham patients. A renowned clinician and teacher, Haynes was once characterized by Stephen Katz, director of the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and a dermatologist himself, as a “dermatologist’s dermatologist” (Katz, personal communication). Haynes was the one consulted when the diagnosis could not be made or if the treatment for a particular patient was not working.

Psychiatry

Psychiatry was included in the many facets of care at the hospital with the involvement of Malcolm Rogers. A graduate of Yale University and the Harvard Medical School class of 1969, Rogers first became interested in psychiatry in college where he studied the neurosciences, and in medical school those interests were reinforced by a rotation in psychiatry and a summer project in sleep research at Columbia University. When his mother developed rheumatoid arthritis in the late 1960s, Rogers gained a deeper appreciation for the struggles faced by individuals with chronic illness. He became chief resident in psychiatry at the Peter Bent Brigham Hospital in 1972. After serving as Lieutenant Commander at the United States Public Health Service Indian Hospital in Rosebud, South Dakota, he was recruited back to Boston by Drs. Martin Kelly and Peter Reich to build the Consultative Psychiatry Service at the Peter Bent Brigham. Reflecting on that period, Rogers noted:

When I returned from the Indian Health Service and joined the Peter Bent Brigham Hospital Division of Psychiatry in 1974, I was assigned the task of doing the psychiatric consultations at the Robert Breck Brigham. I immediately felt that psychiatric input at the Robert Brigham was valued and that I was seeing patients who had long-standing and critical relationships with their rheumatologists, who were already interested and knowledgeable about the psychological and social circumstances of their patients. It was a good fit for me and there was the added bonus of feeling like I was part of a small and intimate community of doctors and nurses and therapists.

One of the lessons I learned early was how functional people could be in the face of potentially crippling or disabling disease. I remember one young adult with juvenile rheumatoid arthritis (who couldn't sit up) who was able to drive a car in a supine position with prism glasses and hand controls. It provided a good benchmark for the rest of my clinical work. (Rogers, personal communication)

As a liaison psychiatrist, Rogers worked with patients with a wide variety of conditions, including those with systemic rheumatic

conditions, allergic disorders, and brain tumors, and patients undergoing orthopedic surgery or renal transplantation. He consulted on outpatients in the new primary care program at the Peter Bent Brigham, and continued the annual psychosocial evaluation of children with arthritis. His contribution was to integrate the management of psychosocial issues into routine care and to help develop a culture of kindness that was part of every patient's care at the Robert. Rogers contributed to the understanding of neuropsychiatric lupus, the effects of the immune system on behavior in animals and humans, and the predictors of post-operative delirium, and he described various psychiatric syndromes in diseases with immunologic features including systemic lupus and systemic mastocytosis (Rogers, Liang, and Partridge 1982; Rogers et al. 1989).

A master clinician and keen clinical observer, Rogers' work on lupus was honored by his election to the American Lupus Society's Hall of Fame. He also received the Massachusetts Lupus Foundation Recognition Award and the Henrietta Aladjem Summa Award. A person with broad interests, Rogers was a columnist for the *Beacon Hill Times*, a watercolorist, and a cabinet maker.

Neurology

The neurologic manifestations and complications of rheumatic illnesses and orthopedic disorders were a focus of David Dawson and, for a short time, Kenneth Nakano. Both were members of the neurology group at the Peter Bent Brigham, whose senior members were colorful, brilliant, and at the forefront of a burgeoning new field (Dawson 2007).

Dawson graduated from the University of Michigan Medical School and completed his training at the Peter Bent Brigham Hospital; he then trained in neurology at Boston City Hospital before returning to the Brigham in 1967. Dawson described the entrapment neuropathies seen in orthopedic disorders and the neurological sequelae of cervical involvement in rheumatoid arthritis and used nerve conduction studies to identify where nerves might be damaged along their anatomical course.

Anesthesia

During the most active period of the hospital's orthopedic surgery program, two operating rooms and a six-bed post-anesthesia recovery unit were operating. Anesthesia for the surgical management of patients with musculoskeletal disease and systemic rheumatic diseases introduced special technical challenges. For instance, patients with progressive rheumatoid arthritis might have involvement of the first two vertebrae in the neck (the atlanto-axial joint), as well as involvement and destruction of neck ligaments – conditions that could compromise the adjacent spinal cord. Intubation of these patients for general anesthesia was technically difficult and potentially risky. Children with arthritis might have bone growth abnormalities and patients with advanced scleroderma might have recessed and small mouth openings, making airway maintenance challenging. The work to develop techniques that would enable these patients to safely receive appropriate anesthesia for their procedures had its beginning at the Robert Brigham. In addition, operations on the upper extremity and the hand and wrist were made possible with developing techniques in regional anesthesia.



Comprehensive care was enhanced by the work of the social service department. Shown in this 1968 photo are (left to right): Joan Morse, Laura McCarthy, Flora Bussewitz, Faith Rogers, and Priscilla Clark.

Leroy Vandam (1914-2004), the renowned chief of anesthesiology at the Peter Bent Brigham, recruited Philip A. Lief (1917-1992) to the Robert Brigham. Lief was born in Boston and graduated from Harvard College in 1937. He received his medical degree from New York Medical College and trained at Mount Sinai Hospital in New York. In the army, he was a surgeon during the liberation of the notorious Buchenwald concentration camp. He founded the Pain Treatment Center at Brigham and Women's Hospital and later founded the anesthesiology department at the University of Colorado Medical School. He helped develop the local anesthetic, procaine, and served as chair of the Ethics Committee at the Massachusetts Medical Society.

In 1971, Lief was joined by anesthesiologist Mercedes Concepcion, whose journey to the Robert Brigham began in the Dominican Republic. One of eight children, Concepcion experienced turmoil and violence in her homeland. She completed medical school in Santo Domingo. She would later recount a frightening story of fortuitously switching her call schedule at the local hospital with a colleague, only to return home that night to find her apartment vandalized and her personal belongings scattered on the roof. She had friends who had been killed in the political turmoil, and, feeling she had averted interrogation or worse, she fled to Canada with the help of Alberto Rincon, the Canadian ambassador, a family friend. In Montreal she trained for five years at McGill University.

Concepcion was a spirited counterpoint to Lief. She liked routine and was unflappable, kindly, circumspect, soft-spoken, and devout. She was involved at the beginning of many innovations in the care of arthritis patients, and felt fortunate to be at the Robert Brigham, which she called "a jewel of a place, all-embracing, and like a family" (Concepcion, personal communication). She led the new specialty of regional anesthesia at the Brigham and Women's Hospital as it became recognized nationally as a subspecialty area.

Podiatry

Painful feet and toes are among the most disabling aspects of arthritis. Out of view, the pain is a constant presence for the patient and can sig-



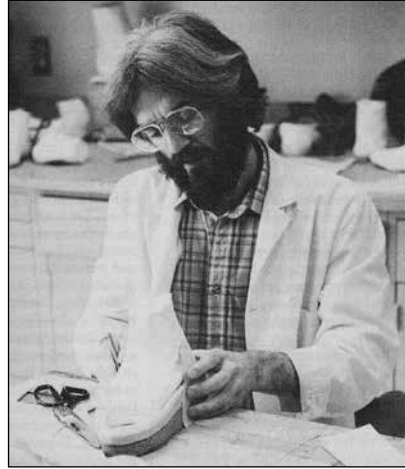
Dr. Bruce Wood

nificantly impact functioning. This meant that podiatry was an essential service at the Robert Brigham. In 1974, its principal, Bruce Wood, became the first full-time staff member in podiatry appointed at Harvard Medical School. When he was a high school student, Wood was taken by his father – who worked at Strathmore, a maker of fine papers – first to his paper-making plant, then to a dentist and to a podiatrist in the hopes of sparking a career interest. The younger Wood felt paper production was too difficult and dentistry did not have enough interaction with patients, but he became intrigued with podiatry (Wood, personal communication). He attended the University of Massachusetts Amherst and then Temple University's program in podiatry. In his senior year, the school closed and he transferred to the California College of Podiatric Medicine in San Francisco.

Wood served in the army from 1962-1965, stationed at Fort Sill, Oklahoma, and then opened a practice in Fremont, California. Afterward, he bought a practice in Watertown, Massachusetts, from a friend who was also in charge of podiatry at the Peter Bent Brigham Hospital, meaning Wood assumed this leadership role as well. At the Peter Bent Brigham, Wood was soon disappointed by the lack of organization for providing foot care there and resigned when he could not implement the necessary changes, turning his full attention to his private practice. It wasn't long before his assessment was validated; he was asked by Sledge to return to implement improvements at the Peter Bent Brigham, and to start podiatry at the Robert Brigham. Sledge jokingly challenged Wood, "Your job is to keep these feet away from my surgeons."

Wood recruited a key figure in foot management to the Robert Brigham – Barry Bent. A graduate of the San Francisco Art Institute, Bent joined the rehabilitation department in 1977 to make foot orthotic devices, special shoes, and other modifications for shoes so that patients with foot deformities could walk. In collaboration with Wood,

Bent made these from raw materials in a specially-outfitted workshop at the hospital. This was at a time when these appliances, and the expertise needed to develop them for people with arthritis, were unavailable in the general community. One innovation, affectionately known as the Robert Brigham sandal, though not a paradigm of style, was so helpful to patients they would come back for replacement pairs when originals wore out.



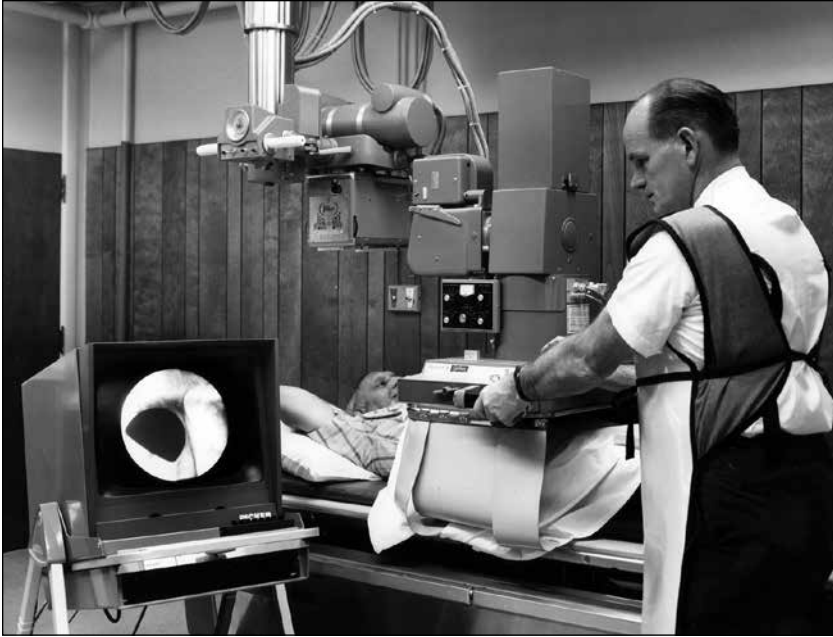
Barry Bent made custom orthotics and other footwear in a specially-outfitted workshop at the Robert Brigham.

Wood's foot management program had many supporters.

One notable one was Yousuf Karsh (1908-2002), the legendary photographer from Ottawa, Canada. Karsh and his family were also major supporters of Harvard Medical School and the rehabilitation department. Karsh gifted Wood one of his most iconic images – a pouting, defiant Winston Churchill. (Legend has it that Karsh pulled Churchill's cigar from him just before the shot.) Karsh was to send Wood eight more photographs, and they all hung in his office.

Radiology

The Robert Brigham had been an early adopter of the emerging technology of roentgenology in the assessment and diagnosis of musculoskeletal disorders and in research, and this came to fruition at the hospital. It built on the work of two physicians who were in the vanguard of the new and emerging specialty of bone radiology – J. Leland Sosman (1920-2008) and his protégé, Barbara Weissman. With their colleagues, they witnessed the explosion of technologic advances in imaging that were to come, such as image magnification, radionuclide scanning, arthrography, computerized axial tomography ("CAT" scans), and magnetic resonance imaging (MRI) – the latter two eclipsing the advances



Dr. Leland Sosman, a pioneer in radiology and imaging for the diagnosis and treatment of rheumatic and musculoskeletal disorders. October 14, 1969.

made in plain x-ray radiography. These technologies would not only help clinicians diagnose some specific forms of arthritis; they would also provide information on bone integrity and bone metabolism, and on the destructive nature of particular forms of arthritis.

Leland Sosman was a second-generation radiologist in Boston. After studying biochemistry at Harvard, he attended Johns Hopkins School of Medicine where he completed his training in 1946. He had spent many dinners where his father, Merrill Sosman (1891? – 1959), a noted radiologist at the Peter Bent Brigham Hospital, would talk about unusual things he had seen on x-rays or interesting cases from exotic locales. However, in medical school, the younger Sosman gravitated to surgery. He did a surgical internship at the Peter Bent Brigham Hospital, but realized that doing the same procedures repeatedly did not appeal to him. Instead, he favored the detective work of medicine. After army

basic training at Fort Sam Houston, he indicated his interest in pathology and was assigned briefly to Frankfurt and then to the 98th General Hospital in Munich where he was the medical examiner and performed autopsies.

By then, his radiologic upbringing took root and he started his radiology training – then a combination of x-ray diagnosis and radiation therapy – at the MGH in July, 1949. After another six months as the chief resident in radiology at Children’s Hospital Boston, he returned to the Peter Bent Brigham as a radiologist in 1952 as the fourth staff member in addition to his father, Sandy McMillan, and Jim Deely. At the time, x-rays at the Robert Brigham were being read by private radiologists who would come by the hospital to read what x-rays had been taken. But Bayles wanted a permanent staff radiologist and arranged for the younger Sosman to spend part of his time at the RBBH.

It wasn’t long before the radiology work at the Robert Brigham mushroomed and took more and more of Sosman’s time. The hospital was attracting an increasing number of referrals for which physicians in the community had little experience or interest; as such, it was an incredible laboratory for defining the role of radiology in diagnosis and management. In addition, subsets of arthritis were being defined and characterized by laboratory tests and other means, and the x-ray appearance of some disorders could sometimes be important clues or determinants. Sosman and his trainees had a virtual gold mine of patient material on which to hone their powers of observation. They made meticulous descriptions of their subtle findings, often with far more case examples than those that had been described in the literature. Because



The hospital was attracting an increasing number of referrals for which physicians in the community had little experience or interest; as such, it was an incredible laboratory for defining the role of radiology in diagnosis and management.

Sosman nurtured close collaborations between clinicians in radiology and those caring for the patient in both medicine and surgery, the clinical significance and meaning of the particular x-ray findings could be interpreted more accurately. Sosman was a meticulous clinician and had

a fetish for color-coding the films of an individual patient's course and for insisting that the films be carefully ordered in their envelopes. As a teacher, he had few peers; he used humor, puns, and stories to lace his interactions and drive home points with the clinicians who sought his interpretation of their patients' x-rays. He kept an x-ray of a pork chop to illustrate the critical anatomy that one could "see" on films. An important teaching collection x-ray archive was made, which added to the training resources. A pioneer in the radiology of the systemic rheumatic diseases, he described many important roentgenographic signs of specific disorders in rheumatology.

An avid and accomplished skier, Sosman was active in competitive skiing events and a renowned leader in the sport. He served as director of the United States Ski Association for over 30 years, earning that organization's highest volunteer honor – the Blegen Award – in 1976. He was inducted into the United States National Ski Hall Of Fame in 1999 (Obituary 2008).

Barbara Weissman, Sosman's protégé, attended a year of medical school at the State University of New York Downstate Medical Center



Dr. Barbara Weissman

before she married and transferred to Tufts University School of Medicine. She was one of only three women in her graduating medical school class at a time when most women felt their choices in medicine were limited to psychiatry, dermatology, or radiology. After a rotating internship at St. Elizabeth's Hospital in Brighton, Massachusetts, she was befriended by the renowned radiologist, Alice Ettinger (1900-1993), who contacted Harry Z. Mellins (1922-1987) at the Peter Bent Brigham Hospital on Weissman's behalf. Mellins brought Weissman on board as a bone radiologist. Weissman trained with

Sosman from 1970-1973 and then joined the staff. She became a leading authority on the x-ray features of juvenile rheumatoid arthritis.

Two important factors helped the emerging specialty develop its evidence base. The first was a practical one. In the 1970s, when clinicians in orthopedics considered doing and interpreting their own x-ray films, Sledge persuaded them to keep these functions within radiology. The second factor was the decision regarding which x-rays should be recycled for their silver content and which should be archived because of their scientific value. The decision to preserve indefinitely the x-rays on patients receiving total joint arthroplasties, those with juvenile rheumatoid arthritis, and x-rays in the teaching collection, provided the basis of very important observations on the clinical course of these patients and made it possible for Weissman and Sledge to write the classic text, *Orthopedic Radiology* (Weissman and Sledge 1986).

Pharmacy

Pharmacy services that were innovative for their time were also introduced at the RBBH and flourished during this period. The pharmacy, which provided medications and intravenous supplies for the 98-bed facility and its busy outpatient service, was run by one individual for 26 years – Phil DiMattia. Born in the West End of Boston in 1930, DiMattia obtained his BS at the New England School of Pharmacy. In the army, he served at Walter Reed Army Medical Center and in Germany where he set up the pharmacy at the 97th General Hospital. After discharge, he intended to get his master's degree at the University of Maryland but was persuaded to run the pharmacy at the Robert Brigham by William E. Hassan (1924-1995), who had administrative responsibility for the pharmacies at the Parker Hill Hospital, the Free Hospital for Women, and the Robert Brigham. Di Mattia eventually got a master's from the New England School of Pharmacy in 1974 but felt he learned most about pharmacy from his experience at the hospital.

DiMattia worked in the era when aspirin and enteric-coated aspirin were the main medications used to treat systemic rheumatic disorders like rheumatoid arthritis. Often prescribed as anti-inflammatory agents, patients would need to take up to 20 tablets of these medicines a day to achieve the desired effect. When the medicine was near its thera-



Pharmacist Phil DiMattia worked for 26 years in the pharmacy at the Robert Brigham.

peutic range, it caused many side effects. The pharmacy had an inventory of about \$24-26,000 worth of the basic drugs used at that time, which also included injectable gold salts and hydroxychloroquine. Bayles had not been “impressed” by the observation that patients with malaria and rheumatoid arthritis had their arthritis improved by hydroxychloroquine given for their malaria, but the drug became a mainstay in the armamentarium.

As changes were put in place to help prevent infections in surgical patients, including the introduction of laminar flow into the surgical suites and the increased use of intravenous (IV) antibiotics, DiMattia established an intravenous therapy program at the hospital. He prepared IV solutions, compounded agents, and tracked investigational drugs. In 1976, the hospital was an early adopter of unit dosing,

in which medications were blister packaged. Although the new system required additional pharmacy help, its net effect was to save nursing time and reduce medication errors. Another innovation of the Robert Brigham pharmacy was weekly rounds with the inpatient care team including nurses, physical and occupational therapists, dietitians, and physicians. Care was coordinated and individualized and discharge planning started on these rounds.

The merger

A corporation called the Affiliated Hospitals Center had been meeting since 1962 to discuss the idea of merging several Harvard-affiliated hospitals, including the Robert Brigham. In 1975, the Robert Brigham formally merged into the AHC, along with the Peter Bent Brigham Hospital and the Boston Hospital for Women (the result of a previous merger between the Free Hospital for Women and the Boston Lying-in Hospital). Within this organizational framework, each hospital continued to function as a division and maintained its direction through a Divisional Board of Overseers and the retention of its endowment funds. Groundbreaking for a new physical plant at 75 Francis Street occurred on December 20, 1975, and the new facility opened in July of 1980 with 680 beds. Within a few months, the name Brigham and Women's Hospital (BWH) was official. The old Robert occupied the top three floors of the new hospital. Floors 14 and 15 were for rheumatology and orthopedic inpatient beds, and the 16th floor housed physician offices, the outpatient arthritis clinic, and rehabilitation services, which included a therapeutic pool. Outpatient therapy services and the arthritis clinic eventually moved to the ambulatory services building at the BWH as the Robert B. Brigham Arthritis Center, carrying the name of the Robert Brigham forward.

At the time, the Brigham and Women's was the largest merger of teaching hospitals in the nation. It was conceived before regional planning, environmental concerns, and strict government regulation became major factors. But each of these forces presented challenges, and costs soared as a result. Originally planned as an 800-bed hospi-

tal, the Brigham and Women's could have been built in 1967 for \$30 million. Instead, the 680-bed hospital was completed in 1980 for \$118 million (Kastor 2001).

One cannot underestimate the intensity of the negotiations that occurred as three venerable, independent institutions with strong identities were brought together to make decisions in common (Kastor 2001). However, the merger would allow each hospital to better pursue its own goals with a full range of medical, surgical, ancillary, and administrative services. In addition, planners felt that by eliminating duplication, cost savings could be achieved.



This 1974 photo shows members of the Robert Brigham staff, described by many as “The Robert Family.”

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Understanding the Basic Mechanisms of Inflammation and Rheumatic Diseases

The new Brigham and Women's Hospital inherited a rich legacy from the clinical, academic, and research programs in rheumatology established at the Robert Brigham by Austen and his colleagues and their protégés. Their work on understanding inflammation – an essential feature of the systemic rheumatic illnesses such as childhood arthritis, rheumatoid arthritis, systemic lupus erythematosus, the spondyloarthropathies, and the vasculitides, as well as infectious diseases, allergies, and diseases affecting the skin and the lung – paved the way for subsequent breakthroughs. A full accounting of this work would fill volumes. Some key areas included: research on the alternative complement (or properdin system) – an important pathway of inflammation; work on macrophage migration inhibitory factor (MIF); studies to define the structure and function of slow-reacting substance of anaphylaxis (SRS-A) and its three components – the cysteinyl leukotrienes LTC₄, LTD₄, LTE₄ – and its critical role in asthma; the demonstration that cysteinyl leukotrienes could impair human airflow 1,000 times more than histamine; and the finding that plasma bradykinin was elevated in hereditary angioedema. These and many more discoveries ushered in the modern era of rheumatology and the development of improved diagnostics, biologic agents, and individualized therapies. This would not have been possible without strong leadership and an environment that attracted the best talent, facilitated interaction, and encouraged discovery. It did not happen overnight, but Austen steadily built the enterprise of the young institution, encouraging seasoned as well as novice researchers to join in.

The first two people he persuaded to join him were John David and Peter Schur; many more would follow. Some came to the Robert Brigham while students at Harvard Medical School. In many cases, their experiences in the hospital or in Austen's lab would influence their future career development. William Koopman was one example. Drawn to Austen's lab as a medical student because of its reputation, Koopman went on to become a distinguished scientist and academic leader at the University of Alabama in Birmingham, serving there as chief of rheumatology and, eventually, chief of medicine. He also served as president of the American College of Rheumatology.

Michael Lockshin was another example of a medical student who had influential experiences at the Robert Brigham. The son of Jewish immigrants who were driven out of the Ukraine by the pogroms and the Cossacks, Lockshin was deeply affected as a first-year Harvard medical student by the death of a young pregnant woman with systemic lupus erythematosus (SLE). He was even more disturbed when he asked, "Why?" and the pathologist answered, "They just die." Lockshin had an epiphany and realized that, even at Harvard, important things were not known or understood. He would go on to study rheumatology with the legendary Charles Christian and follow Christian to Cornell University Medical College and the Hospital for Special Surgery (HSS). Lockshin helped lead the fledgling National Institute of Arthritis and Musculoskeletal and Skin Diseases, before returning to the HSS as director of the Barbara Volcker Center for Women and Rheumatic Diseases. One of the world's leading authorities on SLE, the effects of pregnancy on SLE, and the antiphospholipid syndrome, a serendipitous encounter at the Robert in the 1960s may have set it all in motion.

Another group came to the Robert Brigham as medical interns and residents from the Peter Bent Brigham Hospital, staying on to learn rheumatology or to begin a research project, only to find themselves "turned on" to science. This group included Ed Goetzl and Hugh McDewitt. For all, Austen made them feel welcomed and showed them the excitement of research. Goetzl would later note, "I think of the Robert Brigham often – as a golden period in my own professional history...As

first year residents, Kenneth Falchuk and I were provided the resources to complete a study of the respiratory physiology of joints by then pathologist Peter Kulka and Frank Austen. It's a great example of how the Robert Brigham, under Frank, promoted house-staff and student development" (Goetzl, personal communication).

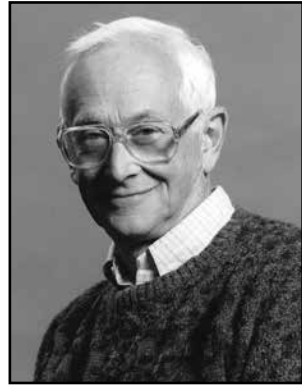
The talent that was recruited to the Robert Brigham would go on to populate many other centers world-wide, continuing and expanding their work and propelling the field forward. Some of the notable researchers are profiled here.

John R. David

John David, who was a house officer with Austen at the Massachusetts General Hospital (MGH), was recruited to the Robert Brigham in 1966 and would lead the study of cell-mediated immunity and become a visionary physician scientist and leader.

Born in Middlesex, England and educated briefly in Paris, David, along with his mother and sister, left Britain at the beginning of World War II in 1940. He was 10 years old at the time. His father, Charles Henri David, a movie director, was stranded in Dunkirk and had to go to Casablanca, then to the south of France and to Lisbon before rejoining his family and settling in Hollywood. In 1950, the elder David married singer/movie star, Deanna Durbin.

John David completed his early schooling in Hollywood and then went to the University of Chicago for his undergraduate and medical degrees. In the mid-1950s, he came to Boston for internship and residency at the MGH and there met his wife, Roberta Detulis from Attleboro, Massachusetts, a nurse on the wards at the time who would become a collaborator in his research.



Dr. John David

David spent two years at the National Institutes of Health and a year with Jeffrey Asherson at Taplow in England. During this period, he asked three different people he admired for career advice: John Humphreys, Peter Medawar, and Walter Bauer. Each one recommended he work with Lewis Thomas at New York University.

David followed their advice and spent his formative years as a basic scientist at the New York University School of Medicine. In the 1960s, it was a virtual hotbed of research in cellular immunology, with luminaries such as Lewis Thomas (1913-1993), H. Sherwood (“Jerry”) Lawrence (1916-2004), Victor Nussenzweig, and future Nobelist Baruj Benacerraf (1920-2011). One of the central questions at the time, one that led David to his most important discovery, was how lymphocyte cells could mediate the cellular immune response in the absence of antibodies.



Dr. John Coyne (left), Dr. Heinz Remold (right), and an unidentified lab assistant tending a cow that was kept on the grounds of the Robert Brigham. The cow was used as a source for the lymphocytes that were needed for research on macrophage migration inhibitory factor (MIF), which was later found to play a role in rheumatoid arthritis.

David described macrophage migration inhibitory factor, the first known cytokine (mediators of the immune response), simultaneously and independently of fellow scientist Barry Bloom, who is also credited with the discovery (and who was dean of the Harvard School of Public Health from 1998-2008). The discovery that lymphocytes produce soluble mediators that trigger functional activities in other cells had enormous significance. It launched the work to characterize other molecules responsible for cell-cell interactions. In the following decade at the Robert Brigham, David's lab was a leading center for work on macrophage immunology and trained people such as Steve Rosenberg, Carl Nathan, Heinz Remold, and Ross Rocklin.

The John David laboratory was one of ferment and creativity. At the forefront of the biological revolution, it had its fun moments thanks to a leader with infectious enthusiasm, vision, and broad interests. David was a musician, a sailor, an adventurer, a humorist, and a humanitarian. His lab housed a cow at the back of the hospital as a source of lymphocyte cells for the research, obtained through a cannula in its thoracic duct, and the ritual of harvesting these in the mornings was a source of bemusement for the patients. At one point, the cow's stomach became so bloated as a consequence of repeated general anesthetics that a hose had to be inserted and the resulting fluids flooded the area.

During the late 1960s, David and his wife Roberta, along with other physicians at the Peter Bent Brigham and the New England Deaconess Hospitals, helped the Black Panthers develop a clinic for the African American community. David was in charge of the medications and persuaded drug companies to give money. The two worked every Tuesday night out of a trailer parked on Ruggles and Tremont Streets, and saw 20 patients between 7 pm and midnight for a variety of primary care problems. During the Hoover years of the FBI, David would have his taxes routinely audited.

In the 1970s, inspired by an invitation from Kenneth Warren (1929-1996) to spend the summer working on schistosomiasis as part of a Rockefeller Foundation project in Saint Lucia, David's work turned increasingly to the parasitic infections. He became chief of tropical medicine at Harvard Medical School and, in 1981, after starting a successful

course on the biology of parasitism at the Marine Biological Laboratory at Woods Hole, Massachusetts, he succeeded Nobelist Thomas Weller (1915-2008) as the chairman of the Department of Tropical Public Health at the Harvard School of Public Health. There he presided over an eclectic group of scientists, all doing work that keenly interested him.

Peter H. Schur

Austen also searched for an expert in humoral immunity (the parts of the immune system involving antibodies), and he found that person, Peter Schur, through his connections at Walter Reed Army Medical Center. In 1967, Schur had just completed his training in the laboratory of the legendary Henry G. Kunkel (1916-1983) and was looking for an academic position. One of the people he contacted was Elmer Becker at Walter Reed. Becker in turn connected Schur with Frank Austen, who recruited him to the Robert Brigham.



Dr. Peter Schur

Schur was born on May 9, 1933 in Vienna, Austria into a family of distinguished physicians. His father, Max, was Sigmund Freud's physician, at the suggestion of Princess Marie Bonaparte, from 1929 until Freud's death in 1939 (Friend 1971; Schur, personal communication).

After Hitler's Anschluss of Austria in 1938, the Schur family fled Austria, staying in Paris with Marie Bonaparte and her husband, Prince George of Greece and Denmark, and in London with the Freud family, before emigrating to the United States in 1939. Max Schur took the New York State Board exam for physicians, but the whole family soon sailed back to London to be with Freud, who died September 23, 1939. The elder Schur wrote a book about his experiences tending to Freud as he died of cancer (Schur 1972). The family sailed from Southampton to France on the *SS President Harding*. En route, the ship encountered and

rescued war survivors in lifeboats. On board, Schur's mother, Helen, an orthopedic surgeon, performed an emergency appendectomy and his father gave anesthesia. The ship and passengers also survived a hurricane; Helen Schur cared for some 100 people who had sustained fractures during the storm (Schur, personal communication).

In the United States, Max Schur had a private practice in internal medicine and had many psychoanalysts as patients, but could only obtain hospital privileges to admit patients at Bellevue Hospital as many hospitals refused Jews and/or refugees. He eventually became a psychoanalyst full time and was a founding member of the Psychoanalytic Association of New York, serving a term as that organization's president. He was also editor of the *Journal of the American Psychoanalytic Association*. Helen Schur was one of the first women physicians in orthopedics. She ran the polio unit and the posture clinic at Mount Sinai Hospital. As polio became less of a problem after the development of the vaccine, she re-trained in child psychiatry.

Peter Schur grew up in New York. He attended Yale College and Harvard Medical School. He trained in internal medicine at Bronx Municipal Hospital where he was named chief medical resident, an appointment that often presaged a career in academia. After that, he served in the army and was assigned to the Department of Immunochemistry at Walter Reed Army Institute of Research, and was codirector of the arthritis clinic at the Walter Reed Army Medical Center.

After discharge from the army, Schur worked at The Rockefeller University with Henry Kunkel, who trained many others who were destined to become leading physician-scientists during the explosion of clinical immunology. This included Ed Franklin, Eng Tan, Mart Mannik, Jacob Natvig, Robert Winchester, Halsted Holman, John Winfield, and Robert Lahita.

As a physician scientist, Schur mentored 39 individuals from all over the world, many of whom achieved distinction in their own right. Deh-Ming Chang's story is detailed below. Another notable was Raoul Houssay of Argentina, a son of Bernado Houssay, who shared the 1947 Nobel Prize in Physiology or Medicine for his work on the

hypothalamic-pituitary axis. Raoul Houssay returned to his country to become one of its early leaders in the field of rheumatology. Schur also mentored Melvin Britton, Austin Sargent, Edmund J. Lewis, Alejandro E. Franco, Richard Panush, Elliot Alpert, Nicholas Bianco, Jean Jackson, Carolyn Bell, Hyman Tannenbaum, Louis Simchowitz, David Gibson, Melvin Medof, David Glass, Fred Hochberg, Donald Raum, Gary Kammer, Richard Brodman, Patricia Fraser, William Lloyd, Susan Hoch, Roger Eaton, Ellen Munves, Bernard Weill, Rafael Valle, Zdenka Fronek, Robert Jandl, May Chatila, David Wong, Jacques Tebib, Epaminondas de Mendonca Neto, Ashok Kumar, and Priti Kumar.

Schur was editor of rheumatology's most prestigious journal, *Arthritis and Rheumatism*, and editor-in-chief of the rheumatology sections in UpToDate, a web-based information resource for physicians and one of the most influential of its genre. He served on Institute of Medicine committees to advise the country on major public health concerns such as marijuana and the Gulf War syndrome. In 1975, he took a phone call from a parent in Old Lyme, Connecticut, whose child was one of several in the area who had come down with arthritis. Schur suspected an infectious agent and suggested the parent report the case to the local public health department, where Dr. Allen Steere (who was at Yale University School of Medicine at the time and later joined the staff at the MGH) described the tick-borne illness, Lyme disease. In 1982, Dr. Willy Burgdorfer subsequently described the organism *B. burgdorferi* that caused the illness. Gustave Dammin (1911-1991), a pathologist at the Peter Bent Brigham who also took part in the world's first kidney transplant at the hospital, was to have his name associated with the tick responsible for transmitting the organism – *Ixodes dammini*.

Schur had a longstanding interest in systemic lupus erythematosus (SLE) and ministered to many patients with the rare condition. He studied the pathobiology of the disease and was among the first to describe the occurrence of SLE in persons with inherited deficiencies in the complement system. Over a lifetime, he advanced the understanding of autoantibodies and the inheritance of SLE. He described the pathogenesis of polyarthritis in viral hepatitis; the biology and immunochemistry of antibodies in SLE and its major phenotypes; and was the first

to discover that complement levels often go down and DNA antibody goes up prior to exacerbation of SLE. He was a founding member of the Lupus Foundation of America. With his patient, Henrietta Aladjem, a major force in the Lupus Foundation of America, he wrote, *In Search of the Sun: A Woman's Courageous Victory over Lupus* (Aladjem and Schur 1988). A collaborative narrative, the book provided the perspective of both patient and physician and was a unique resource for patients facing the disease, anticipating a shift in the view of the traditional doctor-patient relationship from a hierarchical to a collaborative model.



Schur was the “go-to” physician for SLE, getting the most challenging and complex referrals from community-based physicians and experts alike.

Schur was the “go-to” physician for SLE, getting the most challenging and complex referrals from community-based physicians and experts alike. In an era of specialization, he was a primary care lupus expert; his patients were devoted to him and saw him as the one they would call first for any symptom and for any problem. He almost never turned off his pager. A description once written of Schur’s father could easily have described his son’s doctoring style: “His clinical skills included both psychiatry and medicine. During a period when paternalism was common, he modeled, through his treatment of Freud, a modern doctor-patient relationship based on veracity and respect for individual autonomy. He was indeed a complete and modern physician” (Wittenberg and Cohen 2002, 216).

To his colleagues, Schur was known for his baked specialties, for passing out chocolates at conferences, and for his wry sense of humor. As he advocated for people with lupus, he worked with the staffs of Senator Ted Kennedy, a strong advocate for universal health care and a friend of the Harvard medical community, and President Bill Clinton. In his 60s and beyond, Schur was still active caring for patients; his passion outside of work extended to biking and hikes in Italy and France. At the final gala at a rheumatology meeting in Colombia, South America, he danced with the mistress of Pablo Escobar, the Colombian drug lord.

Douglas T. Fearon

One of Austen's trainees, Douglas Fearon, exemplified the bright young physicians that came to the Robert Bringham in their formative scientific years and who went on to become leaders in immunology (Nuzzo 2005). Fearon studied English literature at Williams College and was a quarterback on the football team. Upon graduation, Fearon, whose father was a physician in Brooklyn, NY, decided to study medicine. He graduated from the Johns Hopkins School of Medicine in 1968 and completed an internship and residency there. In 1972, after being awarded a Bronze Star in Vietnam in the Army Medical Corps, Fearon was accepted in Austen's laboratory despite his lack of science background. He found others there like him. "He always encouraged me to follow my ideas," Fearon says of Austen. "He took a chance on me.... he gave us the self-assurance that we could approach clinical problems through basic science... This let us understand the mechanisms of diseases and move beyond the sorts of correlative observations you find in a lot of clinical research" (Nuzzo 2005, 7415). With Austen, Fearon studied innate immunity, focusing his attention on the complement system, which supports the activity of antibodies by directly attacking microorganisms, or making it easier for the microbes to be destroyed by phagocytosis.

At the Robert Bringham, Fearon cared for a patient with rheumatoid arthritis for 15 years who eventually died. It was an epiphany for Fearon. He recalled, "This patient's death told me I had to either put up or shut up. If I was committed to being a physician-scientist and making discoveries – and if not being able to cure patients truly bothered me – I had to do research 100 percent of the time" (Nuzzo 2005, 7415). He was eventually to find a setting for his resolve. Fearon became professor of medicine at Harvard Medical School and deputy chairperson of the Department of Rheumatology and Immunology at Brigham and Women's Hospital, and then moved back to Hopkins in 1987 to head the Division of Molecular and Clinical Immunology. There he began his exploration of innate and adaptive immunity. In 1993, he moved to England to pursue full-time a new field of research, immunological memory of lymphocytes, as the Sheila Joan Smith Professor of Immu-

nology at the University of Cambridge School of Clinical Medicine. He was elected to the National Academy of Sciences in 2001.

Edward Goetzl

Another one of Austen's trainees, Edward Goetzl, came to the Robert Brigham in 1971 and stayed at the hospital until he was recruited to the University of California, San Francisco. Schooled at Austen's alma mater, Amherst College, Goetzl went to Harvard Medical School from 1962 to 1966 and then spent two years as a member of the house staff at the Peter Bent Brigham. His talent as a researcher emerged early in his career. As a first-year resident, he worked with Kenneth H. Falchuk on respiratory gases of the synovial fluid in patients with rheumatoid arthritis and other arthropathies, and contributed one of the original descriptions of macroamylaseemia.

Like many young physician scientists of that era, Goetzl went to the National Institutes of Health (NIH). At the National Institute of Arthritis and Metabolic Diseases, he worked with John Decker's group for two years. There, he was involved with the landmark studies that established the use of cyclophosphamide in lupus nephritis. He then returned to the Peter Bent Brigham and Robert Brigham, supported by a special fellowship from the NIH. His work in the Austen lab on the biochemistry of cytokines and the biology of the eosinophils involved with allergy took off.

In 1973, Goetzl was named an investigator of the Howard Hughes Medical Institute. The Institute was an important source of career development for laboratory scientists and was funded by Howard R. Hughes Jr. (1905-1976) – aviator, industrialist, film producer and director, philanthropist, and one of the wealthiest people in the world. Hughes' first will, signed in 1925 at the age of 19, stipulated that a portion of his estate be used to create the institute bearing his name; by 2007 it was America's second largest private foundation and the largest devoted to medical research. Goetzl became best known for his work on a specific component of inflammation and allergy – the arachidonic acid-derived lipid mediators.

J. Peter Kulka

J. Peter Kulka, a pathologist at the Robert Brigham and Harvard Medical School, was one of the first to study the pathology of various rheumatic diseases. He and his collaborators at the Robert Brigham and other rheumatology figures in Boston such as Marian Ropes (1903-1994), Joe Levinson, and Walter Bauer described the microvascular pathology of inflammatory tissue damage, the skin pathology in reactive arthritis, Henoch-Schonlein purpura, adjuvant arthritis, and the lesions of early synovitis. Kulka was a laconic, taciturn figure, remembered by his associates as a precise, demanding, and meticulous investigator. In the days before word processing, every manuscript underwent repeated revisions before he was satisfied. Based in a lab across from Bayles' office, Kulka was one of the first American pathologists to specialize in the study and interpretation of the diseased tissues around the joints in a variety of disorders in order to gain insights into their causes.

H. Ralph Schumacher

Kulka inspired H. Ralph Schumacher, who was to become one of the leaders of American rheumatology, to come and study at the Robert Brigham. Schumacher, in a sense, continued Kulka's work in synovial membrane pathology and Marian Ropes's study of synovial fluid characterization, which served the emerging field of rheumatology at a time when little was known about its subsets. Schumacher and Kulka's paper on the value of synovial biopsies and the synovial pathology of rheumatic disorders was a seminal work (Schumacher and Kulka 1972). One of their research techniques was collecting joint fluid from patients in the operating room under the guidance of a surgeon. In modern medicine, joint aspirations are commonplace and done routinely as outpatient minor procedures by generalists as well as specialists and researchers.

Schumacher was born in Montreal and was the first person in his family to graduate from high school. One of his early role models in rheumatology was Joseph Hollander (1910-2000), whom Schumacher met while a medical student at the University of Pennsylvania and who

would become a life-long friend. Schumacher trained at Denver General Hospital, then at the James W. Wadsworth Hospital, a Veteran's Administration facility affiliated with the University of California, Los Angeles.

From Los Angeles, Schumacher entered the air force and spent time at Travis Air Force Base near San Francisco. As the only rheumatologist in the air force, he was flown all over Asia to consult on difficult cases. Almost overnight, he went from having to "present" every case to the senior staff as a trainee to becoming the "last word" on a particular case – a heady experience. In the air force, he also had the opportunity to go to the University of California, San Francisco, one day a week. There, under the tutelage of renowned teachers and rheumatologists Wallace Epstein and Ephraim Engleman, he stayed excited about the mysteries of rheumatic disease and published the very first description of hemochromatosis arthritis (Schumacher 1964).

Schumacher worked with Kulka at the Robert Brigham between 1965 and 1967. Bayles encouraged Schumacher to spend his second year of research in the pathology department of Harvard Medical School with Guido Manjo and Ramzi Cotran (1933-2000) where he learned to use the electron microscope. The microscope was in heavy use during the working hours and Schumacher often did his morphologic studies late at night.

Schumacher's clinical experience was divided between the Robert Brigham and the Peter Bent Brigham. He was to benefit from the practice that developed at the Peter Bent Brigham general medicine clinic of having specialists practice side-by-side, which not only afforded the opportunity for facile "curbside" consultations, but also allowed a lively cross-specialty discussion. This innovation presaged the development of other similar didactic clinics in the 1970s and 80s.

Following his time in Boston, Schumacher returned to the University of Pennsylvania where he spent the rest of his career. He is known as one of the most distinguished figures in American rheumatology, and credits his experience in Boston as seminal to his career trajectory (Schumacher, personal communication).

Shaun Ruddy

Another trainee at the Robert Brigham was Shaun Ruddy. Born in Ansonia, Connecticut, Ruddy attended Yale University and then Yale School of Medicine. He spent a year studying at the Pasteur Institute in Paris, where he met his wife, Millicent. He graduated from medical school in 1961 and trained in internal medicine at the Peter Bent Brigham Hospital, with a two-year interlude as a medical epidemiologist in the Hepatitis Surveillance Unit at the United States Communicable Disease Center in Atlanta, Georgia, the forerunner of the current Centers for Disease Control and Prevention. He worked in Austen's lab and discovered the substance beta 1H. This molecule was the control complement component later found on genome-wide screening to be the defective protein in "wet" macular degeneration. This discovery led to trials of steroids in a disease that was not previously recognized as inflammatory. Ruddy left the Robert Brigham in 1974 for the Medical College of Virginia where he became chair of the Division of Rheumatology and later chair of the Department of Medicine. Along with Sledge and others, he was an editor of one of the leading textbooks of rheumatology (Kelley et al. 1989). He was president of the American College of Rheumatology from 1994-1995.

David N. Glass

David Glass (1942 – 2012) came to work at the Robert Brigham after an education in England at the University of Birmingham and at the fine London institutions of rheumatology at the Kennedy Institute of Rheumatology and the Charing Cross Hospital. He worked with Peter Schur from 1974 to 1979 as he began his lifelong focus on the genetic susceptibility of various forms of juvenile inflammatory arthritis. He was recruited to the University of Cincinnati and the Cincinnati Children's Hospital. Led by Joe Levinson, the Cincinnati program Glass would join had an exemplary model of multidisciplinary team care of juvenile forms of arthritis, and Glass's appointment marked a major commitment to growing its research program. In 2003, Glass received the American College of Rheumatology's Distinguished Basic Investigator Award in recognition of his work. Cincinnati has since become

a premier national and international center for juvenile arthritis care and research.

Deh-Ming Chang

The Robert Brigham of Austen and his colleagues attracted a stream of young physician scientists and scientists in training from abroad who, by serendipity or intention, wanted to go to an interesting or well-published lab, to Harvard, to a nice city or one with a relative. Some came with a loose professional connection to someone in Boston, or simply hoped that someone would take a chance and accept a candidate sight-unseen into their program. They arrived in Boston with their own support (which, given the exchange rate and cost of living, was sometimes not enough) and no real idea of what they were getting into or what they would do. Some came from Europe where the academic and scientific traditions were mature and not dissimilar to the United States; others from far less mature medical and research traditions. All faced the challenges of communicating the subtleties and preciseness of science in the



Dr. Deh-Ming Chang

lingua franca of modern science, English. One noteworthy example was Deh-Ming Chang.

Chang was one of a growing number of Asian researchers drawn to Boston's teaching hospitals and labs to study. Chang's early life was impacted by the Chinese Civil War when the Kuomintang retreated from mainland China and moved their government from Nanking to Taiwan. Between 1946 and 1949, some two million refugees from mainland China fled to Taiwan and Chang's family was among them. Supported by his family and extended family, his youth was insulated from the turmoil of post-war Asia. His mother's grandfather-in-law was a physician who served President Hsu. His father and his family had a long history in railroads, but during the Japan occupation, medicine was the first choice of careers. His parents taught, "As the physician, you never worry about daily living needs and get the respect from your patients!" (Chang, personal communication).

After graduating from the National Defense Medical School, Chang got a position in its major teaching hospital, the Tri-Service General Hospital, and was assigned in his first month to rheumatology and immunology. In 1987, he was given the opportunity to do training abroad. His chief, Chung-Tei Chou, had spent a year with Ralph Schumacher and he suggested Chang go to the University of Pennsylvania. Chang had "to go on [his] own way" and did what he had been taught – he went to the library first to see who published in its premier journal, *Arthritis and Rheumatism*. He wrote to Austen, Ephraim Engleman at Stanford, and Steve Malawista at Yale. All answered politely and welcomed him, but he chose Harvard "because it [was] number one" (Chang, personal communication).

In 1988, Chang flew to Boston; it was the first time he had left Taiwan. Although he had passed the TOEFL (Test of English as a Foreign Language), his English was poor and his knowledge of Boston worse. Away from his wife, Chi, and their four-month old son, he worked late nights, living off the hospital cafeteria, fast food, and steamed dumplings. In the second year, the family was reunited and lived in a small apartment. His wife and son, on foot, would frequent places in the Fenway area while Chang worked – usually seven days a week.

Chang made the most of his opportunities. He published three papers and, not satisfied with that, earned a master of science degree in biology at Harvard College – all this during only two years in Boston. Returning to Taipei and the Tri-Service General Hospital, Chang's career flourished. He moved from a resident in medicine to chief of the Division of Rheumatology/Immunology, chairman of the Department of Internal Medicine, and superintendent of the Tri-Service General Hospital. He was eventually appointed dean of the National Defense Medical School and ultimately became the 11th president of the National Defense Medical Center – all by age 52. The National Defense Medical Center, one of the great medical institutions in Asia, occupies 106 acres with a hospital and schools of medicine, dentistry, pharmacy, nursing, and public health.

Expansion of the laboratory research program

With these and many other talented researchers, Austen was able to lead work that would help define the specialty of rheumatology and allergy, and because the science being done was basic to many fields, would bring the Robert Breck Brigham and the Brigham and Women's Hospital widespread acclaim. In 1977, the RBBH, Harvard Medical School, and the Boston Hospital for Women received a \$3 million donation from the Seeley G. Mudd Foundation, and the laboratory moved to the Seeley G. Mudd Building on the campus of Harvard Medical School. In this setting, the research of Austen and colleagues continued.

Tak H. Lee studied how ingestion of oils affects products involved in the leukotriene pathway – a process important to the inflammatory response. He found that ingestion of fish oils by humans led to a change in cell membranes that affected the activity of white blood cells. It suggested that fish oils might dampen the inflammatory response – an idea that was subsequently demonstrated by others to be the case in several diseases, including rheumatoid arthritis and atherosclerotic heart disease.

With John Oates and Jack Roberts from Vanderbilt University, the group discovered mechanisms associated with fainting in patients with systemic mastocytosis (a condition in which too many mast cells

– cells that are critically important in the inflammatory response – are produced). The discovery led to effective treatments to prevent the fainting.

Howard R. Katz identified mast cells epitopes – the part of the cell that is recognized by the immune system – and described how they are made in the body. Along with Jonathan Arm and Mariana Castells, he cloned the responsible gene.

In the late 1990s, the laboratory research programs of rheumatology and allergy moved to the Smith Building of the Dana-Farber Cancer Institute. There, researchers continued to unravel complex mechanisms associated with the inflammatory response, increasingly focusing on understanding the genes involved in the process. The ongoing laboratory programs would continue to help unravel the biologic basis of diseases in rheumatology, immunology, and allergy, and would be complemented by a growing program in the clinical sciences, described in Chapter 11.

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Establishing Modern Orthopedic Reconstructive Surgery

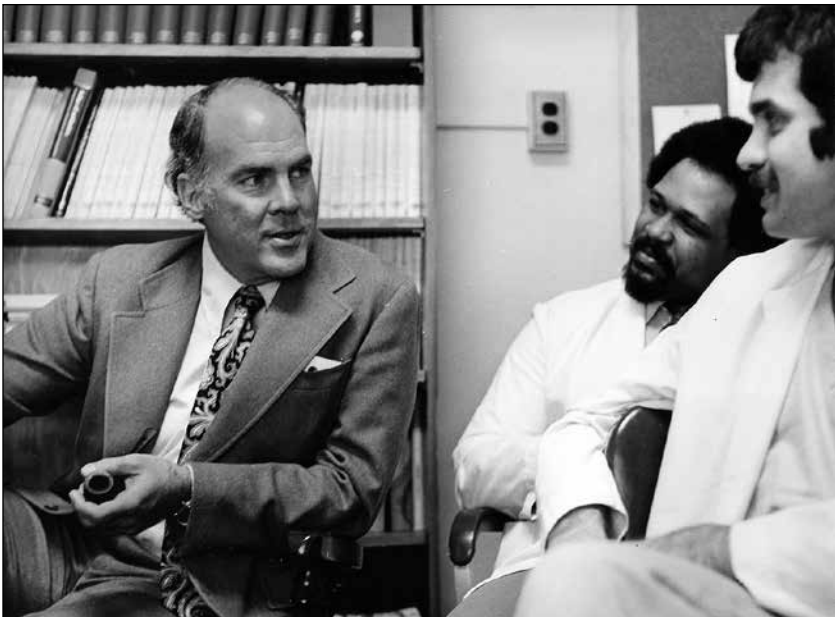
As the specialty of rheumatology grew and developed under Austen, the surgical specialties made their mark under the leadership of Clement Sledge and his colleagues. Sledge's work at the Robert Breck Brigham helped establish orthopedic surgery as a distinct specialty. Under his tutelage, the seeds of modern orthopedic surgery, especially the development of reconstructive operations, flourished in the years leading up to and following the creation of the Brigham and Women's Hospital (BWH).

The numbers tell part of the story. At the RBBH, orthopedic research and surgery activities increased markedly in the 1960s. By 1969, the number of operations had more than doubled since 1950. The operating room was renovated and a recovery room added. Importantly, the increase in the number of surgeries was a direct result of the increase in treatment options that came about as a result of research on reconstructive techniques and prostheses that was led by staff at the Robert. No longer were orthopedic surgeons limited to the largely palliative operations of the early days. Sledge and his colleagues oversaw an era when orthopedic surgeons could offer truly effective treatments to patients whose joints had been destroyed by arthritis, and new surgical techniques to delay the progression of joint destruction. Moreover, their work to establish systematic and standardized ways to track the outcomes of treatment continues to help define best practices in the field.

Joint replacement and other innovations

Artificial hip replacement surgery started in England with the work of Sir John Charnley (1911-1982) in the early 1960s; the operations began in the US about five years later. In the early days of the technology, methyl methacrylate, the “cement” used to fix artificial hips, was considered experimental by the United States Food and Drug Administration. In Boston, its use had to be under the supervision of those licensed to use it in humans. This meant that Sledge or one of two associates had to be in attendance at all hip replacement surgeries.

Under Sledge, the Robert Brigham became a major center for total hip and knee arthroplasty (replacement) as well as other artificial joint surgeries on the finger joints, wrist, elbow, ankle, and shoulder in persons with end-stage inflammatory rheumatic conditions. Work on the artificial knee by Frederick Ewald and Peter Walker brought artificial knee replacement into modern medicine (Murray 1991). At one point, the RBBH was one of only of three hospitals in the US to perform artificial knee replacement (the Mayo Clinic and the New York Hospi-



Dr. Clement Sledge was a consummate teacher and mentor.

tal for Special Surgery were the others) and one of the very few with significant experience in replacing these joints in complicated patients with advanced systemic rheumatic diseases such as rheumatoid arthritis and juvenile arthritis. Getting these patients through surgery was a major challenge. It required expertise in intubating patients with neck involvement from arthritis and meant managing poorly nourished, often immunosuppressed patients who had other health conditions and complications from their arthritis therapy. In some cases, patients required special sizing of prostheses. In 1974, the Robert Brigham group created designs for petite patients with rheumatoid arthritis and the first components were individually made in New Bedford, Massachusetts, by craftsmen from Portugal.

In addition to his surgical expertise, Sledge studied biochemistry which led him to be an innovator in non-surgical approaches for treating forms of arthritis. He pioneered a radiation synovectomy technique in which a short-lived radioactive compound was injected into a joint to destroy diseased synovial tissue in uncontrolled rheumatoid arthritis, or to destroy the rare tumor of the synovium, pigmented villonodular synovitis (Sledge et al. 1977).

Outcomes management and research

Sledge was a major force in the outcomes management and research movement in the 1990s and led programs to measure and track patient outcomes in orthopedic surgery. This was a concept originally put forth by an important Boston orthopedic surgeon, Ernest Amory Codman (1869-1940) in his classic book, *The Shoulder*, in which he urged his colleagues to follow their patients longitudinally to assess their “end-result” (Codman 1934). An obvious idea now, it was entirely new and controversial at the time.

What Codman promoted, Sledge made a reality in joint arthroplasty surgery, taking it to the next step. He created a joint registry at the hospital to collect outcome data systematically and, with Matthew Liang and Robert Poss, organized the first attempts to standardize the measurement of surgical results internationally from the patient’s perspec-

tive (Johnson et al. 2004). The group promoted the use of common data sets with standardized questionnaires so that results could be compared across different prostheses, surgeons, and hospitals (Keller, Rudicel, and Liang 1994).

Sledge extended the scope of his influence on outcomes research when, as president of the American Academy of Orthopaedic Surgeons, he developed support for an advanced research fellowship through which orthopedic surgeons could learn the tools of outcomes research and clinical epidemiology.

Like Austen, Sledge had the ability to recruit a team of talented colleagues whose clinical and research innovations helped propel the field still further forward. Some of these individuals are described below.

William H. Thomas

William Thomas (1930-2011) was on the surgical staff at the Robert Brigham with Theodore Potter and Marvin Weinfeld when Sledge arrived. In 1969, with Sledge and Drennan Lowell, he became one of the founders of the Brigham Orthopedics Associates. He was born in Chattanooga, Tennessee, in 1930. Thomas' father, born in Westminster, Maryland, was an internist who graduated from the University of Maryland Medical School and trained at Johns Hopkins.



Dr. William Thomas

William Thomas's first real passion was flying. Working summers for a contractor who resurfaced landing strips, he found mentors in returning airmen from World War II. He did his first solo flight at age 16. He enrolled at Dartmouth College, but by his own account had an undistinguished first two years when it came to academics.

He still wanted to fly. Passing both the air force and navy examinations to go to flight school, he picked the navy because he liked the uniforms. He was inducted but didn't tell his parents that he had dropped out of college. As luck would have it, he was assigned to go to Korea in August of 1953, but the armistice was signed July 27th and he ended up testing aircraft at Moffett Field near San Francisco. As a navy aviator, he crashed into an aircraft carrier crash barrier and survived with only an injury to the ulnar collateral ligament of the thumb (a condition known as "gamekeeper's thumb") which was never repaired.

He met his future wife, Margaret, in the last year of his tour of duty, and they were married a year later. By this time, Thomas had decided to go to medical school. Knowing his grades at Dartmouth had not been good, he took a chance and applied for re-admission. He was surprised to get a letter of acceptance back in a week, but would need an extra year to complete his studies there. With the constant encouragement of his wife and a faculty mentor, biochemistry professor John H. Copenhaver Jr., he buckled down and earned As and only one B for the rest of his collegiate career. On graduating, he was accepted to Dartmouth Medical School and then transferred to Harvard Medical School, graduating in 1962.

Thomas first went to the Robert Brigham as a resident in 1965 and was captivated by its intimacy and ambiance. He would later recall, "You didn't have to call people because you'd run into them," adding that the Robert was a place "where everybody was happy and liked one another" (Thomas, personal communication).



"What's changed most is the fact that the surgeons can jump in and put in new knees and shoulders and elbows. When I started out, if somebody had bad knees you got a wheelchair, there wasn't anything else you could do. Now they're out playing golf."

The Robert Breck Brigham Oral History Project

Arthur Hall, Ted Bayles, and Theodore Potter stimulated Thomas' interests in arthritis surgery. He finished his orthopedic training in 1967, having spent a year each at Children's Hospital Boston, the Robert Brigham, and Boston City Hospital. He also worked for six months with Otto Aufranc (1909-1990) at the Massachusetts General

Hospital (MGH) doing hip surgery. Although he briefly considered going back to the South, and found a number of major academic centers willing to give him an opportunity to start his own arthritis center, he decided to stay on at the Robert Brigham. Potentially lucrative offers elsewhere were not enough to lure him from the camaraderie and support he had from Hall, Bayles, and Potter. In his first job, he assisted and shared an office with Theodore Potter.

Thomas broke new ground in the orthopedic care of patients with rheumatic conditions. Like his mentor, Potter, he performed a wide variety of orthopedic surgeries. Thomas operated on the shoulder, foot, ankle, hip, knee, and the rheumatoid cervical spine. He operated on children as well as adults. He did the first total hip replacement at the Robert Brigham, after spending a month learning the technique at Wrightington Hospital in Lancashire, United Kingdom, with Sir John Charnley. He may have been one of the first to operate on patients with multiple, end-stage joint disease that resulted from juvenile arthritis – patients who had few other viable options that would improve their ability to function. He also repaired rheumatoid subluxation of the first and second cervical vertebrae – a condition that can threaten the spinal cord. The operation, then and now, was high-stakes as it was often



Dr. William Thomas evaluating a patient's hip motion

performed in frail patients with years of disease and disability. The same processes that destroyed bone and ligamentous attachments often left bone with the consistency of “burnt toast.” Intubation required to ventilate the patient during the procedure was hazardous as the neck had to be tilted backwards to visualize the airway, risking compromise of the spinal cord which could lead to paralysis. Thomas usually did these cases down at the Peter Bent Brigham, where there was more support if things didn’t go smoothly.



“The thing about the surgery is that it does two things: one, it allows them to stay out of nursing homes, and two, it keep them from dying. Because that’s how people die. They get bedridden, they get bedsores, they get infected, they get weak, and they get pneumonia. Most people today are not even on crutches.”

The Robert Breck Brigham Oral History Project

Tall, lanky, gregarious, and with a soothing baritone Tennessee drawl, he was a heart-throb among the nurses and therapists. In the small hospital cafeteria, he received special treatment. Alice, who ran the cafeteria, was friendly towards everyone, but she particularly liked Thomas. She would see him coming for breakfast and immediately put on two or three eggs, a pound of bacon, and toast but would only charge him for one egg and a normal serving of bacon. Others did not fare as well! Indeed, when asked to recall memories of the old Robert, Thomas fondly remembered the warmth and friendliness of the place, including “the Irish nurses and Alice’s breakfasts” (Thomas, personal communication).

He and his wife lived in the same house near the hospital for 42 years, and for 30 years had chickens who were first kept in the basement and then in a coop that Thomas and visiting orthopedic surgeons from Russia built. The Stop sign near the home sported vines with string beans. The home was rarely without visitors – usually students, visiting academics, and others who worked or studied at the various institutions in the Boston area from all over the world. Through the years, some became lasting friends. Always eager to help others, after he retired from active practice, Thomas flew patients in and out of remote areas as part of Angel Flight – an organization that provides free air transportation for persons requiring medical care. He and his wife established the John

H. Copenhaver Jr. and William H. Thomas, MD 1952 Junior Fellowship at Dartmouth College. The William H. Thomas award was established at the BWH to recognize the orthopedic resident that “best exemplifies excellence in orthopedics, devotion to patient care, collegiality, and teamwork.”

Frederick Ewald

Frederick Ewald grew up in the Midwest, the son of a prominent business family. Like many of his contemporaries at the Robert Brigham, he served in the armed forces before joining the staff. A football star at Northwestern University, he joined the Reserve Officers’ Training Corps. As a football player, he sustained many injuries and experienced medicine from the point of view of a patient. Once on active duty, he was assigned to the navy during the Korean War and was stationed for two



Ewald’s other important contribution was the 1974 design of the first total elbow prosthesis, which was developed to reduce pain and improve function in patients with end-stage rheumatoid arthritis involving the elbow.

years in Kaohsiung, Taiwan with the Military Assistance Advisory Group, directing the dispersal of supplies for the military advisers. One advisor, a neurosurgeon, George Becker, was a major influence on his studying medicine.

After graduating from Northwestern University Medical School, Ewald was a medicine intern at Northwestern and then a resident at the University of Minnesota Medical Center, a major center for kidney transplantation. During that year, he did research on kidney transplantation in dogs, putting in nearly all of the shunts. He then went into general surgery at the university before he entered the Harvard Combined Orthopaedic Residency program. Ewald was selected as chief resident in orthopedic surgery at the MGH during the time Clement Sledge was there as a junior attending physician.

Ewald returned to Northwestern where he began to think about how an artificial knee could be designed. During a trip to Boston, he discussed his idea with Sledge who urged him to move back to Bos-

ton. In September, 1971, Ewald joined the staff at the Robert Brigham to pursue his idea. The idea was novel and was to revolutionize total knee replacement. Ewald was interested in creating a surface that would mimic the femur's arc of motion during normal use. He felt that if such a surface could replicate the complex and movable meniscal surfaces of the natural knee, it would also maximize contact and limit polyethylene wear. He made a plastic mold of the distal femur from an average-sized woman, suspended it in a bath of dental wax, and moved it through a range of motion until the wax hardened. The resulting mold looked like a tulip cup. The edges were cut off, leaving anatomically right- and left-sided tibial components. The shape was then created out of polyethylene to form a tibial component that was matched with a femoral cap made of cobalt chrome.

The first total knee simulator based on this design was built by Ewald and his colleagues in 1973 at the Massachusetts Institute of Technology (MIT) with a \$5,000 grant from the Orthopaedic Research and Education Foundation. It was used to perform extensive tests on the design and materials best suited for an artificial knee.

The prosthesis was then implanted in 24 patients at the RBBH from 1975 to 1977. After 10 years, only one implant had loosened. A patent was obtained in 1974. Although the implant was never marketed, its design influenced that of other implants that followed. At the time, the "standard" for replacing end-stage knees affected by rheumatoid arthritis was the McKeever prosthesis. Ewald's design resulted in much quicker pain relief and recovery and was durable.

In 1978, Peter Walker, Sledge, and Ewald developed the first kinematic knee at the RBBH. Soon, most of the design innovations and surgical techniques upon which present-day knee replacement is based had been developed, and the RBBH provided important leadership in this regard. Success was ultimately achieved by combining the experience of these pioneers with careful studies of outcomes.

Ewald's other important contribution was the 1974 design of the first total elbow prosthesis, which was developed to reduce pain and improve function in patients with end-stage rheumatoid arthritis in-

volving the elbow. Ewald used the same approach he had taken with the knee design by taking a mold of the distal humerus through wax to develop a surface that resembled that of the natural joint.

Importantly, the evaluation of the elbow design followed a measured and thoughtful process that was a model of the rigorous, scientific approach to innovation that became the hallmark of the institution. The Robert Brigham team assembled surgeons from all over the country for a two-day course on the surgical technique and post-operative care. The group, all considered investigators, followed a detailed protocol and evaluated outcomes for five to six years before the procedure was disseminated to the wider community.

Over his career, Ewald designed, developed, tested, and implanted some 14 different prostheses for the knee, patella, and elbow. He was an imposing and impressive figure. Soft-spoken and economic with words, his opinions and ideas counted. At the Robert Brigham, rheumatologists and orthopedic surgeons collaborated closely in patient care and knew each other's strengths and personalities in a way not possible in larger institutions. Ewald was usually the first choice when a rheumatologist had a medically complicated patient who needed orthopedic surgery and there were concerns around the amount of anesthesia time the patient could tolerate. Ewald would also take photographs in the operating room so that his medical colleagues could "see" the pathology they were (unsuccessfully) dealing with.

Robert Poss

A native of New York, Robert Poss joined the staff at the Robert Brigham in 1974. He did his undergraduate work at Rutgers University and completed his medical education at the State University of New York Upstate Medical Center in 1962. He spent 1964 to 1966 in the navy, where he served on a guided missile cruiser in the Caribbean and Mediterranean Seas. He then did general surgery training at Case Western Reserve University and finished his orthopedic training in 1970 in the Harvard Combined Orthopaedic Residency Program. The three-month stint at the Robert Brigham that was part of this training was particularly popular with the young surgeons because they got to do a lot of surgery, but it

also was a seven-day a week job where many aspects of hands-on patient care fell to them, including restarting intravenous lines that had infiltrated and transfusing patients throughout the day and night.

During his orthopedic training, Poss was heavily influenced by his role model, Sledge, and went to the Massachusetts Institute of Technology (MIT) to learn cell biology with Alexander Rich and Howard Green. There he tried to recover the “rheumatoid arthritis virus” from human tissue. He learned the value of asking and answering questions in teams of knowledgeable clinicians and multidisciplinary scientists, and these lessons stayed with him as he joined the RBBH faculty.

Like the other orthopedic surgeons at the Robert Brigham, Poss was interested in the design and evaluation of total hip arthroplasty prostheses, and he also specialized in surgeries to delay the necessity for total joint arthroplasty in the hip and knee joints – techniques he honed in 1982 during a Fogerty Senior International Fellowship with Professor Renato Bombelli at the University of Milan, Italy. These procedures included high tibial osteotomy for knee joints (cutting a portion of the bone to help realign the joint) and femoral osteotomy of the hip – both done to change the harmful biomechanical forces across a joint with early osteoarthritis so that the patient could delay the need for a total joint replacement with its attendant finite life.

Out of the operating room, Poss led the development of computerized, standardized documentation systems used in orthopedic surgery outcomes research. He was deputy editor for electronic media for the *Journal of Bone and Joint Surgery (American Volume)* and chaired the American Academy of Orthopaedic Surgeons’ Committee on Electronic Media Education. He developed computer literature search resources and interactive learning programs for practicing orthopedic surgeons and was editor-in-chief of *Orthopedic Knowledge Update 3* for the American Academy of Orthopedic Surgeons (Poss 1990).

Richard Scott

A native of Philadelphia and the son of a distinguished neurosurgeon, Richard Scott did his undergraduate degree at Williams College and at-

tended Temple University School of Medicine. He eloped to marry his wife, Mary, who became a pediatric endocrinologist. She worked as a medical writer for the Smith, Kline and French company for three years while her husband finished his surgery internship at the MGH.

Scott went to the National Institutes of Health from 1969-1971, studying the chemical structure of animal and human collagen, and he was a member of the group that discovered type II and type III collagen. He returned to Boston to the Harvard Combined Orthopaedic Residency Program and became its chief resident in 1974. He then completed a fellowship at the Robert Brigham before joining its staff. He was later to become chief of the implant services at both the BWH and the New England Baptist Hospital (the latter program eventually taking over the former Robert Brigham Hospital facility on Parker Hill following the creation of the Brigham and Women's), as well as chief of the joint arthroplasty fellowship at the BWH.

Specializing in joint reconstructive surgery of the hip and knee, especially in children and younger adults with juvenile arthritis, Scott made many contributions to clinical orthopedics. He published the first descriptions of femoral fractures and osteolysis (dissolution of bone) associated with total hip replacement, and the first description of stress fractures of the patella after total knee arthroplasty, including ideas on its possible etiology. He developed new techniques for the reconstruction of deficient acetabular bone stock to improve the outcomes of hip implants or even to make implant possible; and with others he designed the Knee Society clinical rating system (Insall et al. 1989).

Scott also advanced the surgical care of patients with juvenile rheumatoid arthritis (JRA). He reported the first series of bipolar arthroplasty and the first experience of cement-less total knee replacement in patients with JRA, and the first ten-year follow-up of survivorship of the cemented femoral component in hip prosthesis for JRA of the hip.

In 1998, Scott received the Marian Ropes Award from the Arthritis Foundation for Lifetime Achievement, and in 2006, a Lifetime Achievement Award from the Asian Pacific Arthroplasty Society in Shanghai, China.

Arthur L. Boland

Arthur Boland was recruited by Sledge in 1979 to lead the sports medicine program started by Thomas B. Quigley, a general surgeon. At the time, the care of athletes was in its infancy and its practitioners somewhat marginalized by the medical establishment. There were no training venues and the science underlying the specialty was almost non-existent. Boland was a scholar and an outstanding physician. It also helped that he was an acclaimed athlete.

Boland grew up in Lynn, Massachusetts and co-captained the football team, ran track, and played baseball. In high school, he got interested in medicine, having had injuries requiring trips to the emergency room. As a Cornell history major, he captained the football team and the track team, was the Ivy League champion of the 100 and 200 yard dash, and was eventually elected to Cornell's Athletic Hall of Fame. At Cornell Medical School, a rotation at the Hospital for Special Surgery solidified his choice of orthopedics. In New York, Boland met Jane MacKnight, who was bound for a nursing career, on a blind date and they married after a three-year courtship riding the train between 168th Street and 59th.

The Berry Plan allowed Boland to finish his surgical training before fulfilling the draft requirement. In the service, he became commanding officer of the 731st Medical Detachment at an army training area in Germany. There, he acquired a lifetime of experience caring for the wounded and injured soldiers who played realistic "war games." Upon discharge, he trained in the Harvard Combined Orthopaedic Residency Program and was the chief resident at the Massachusetts General Hospital.

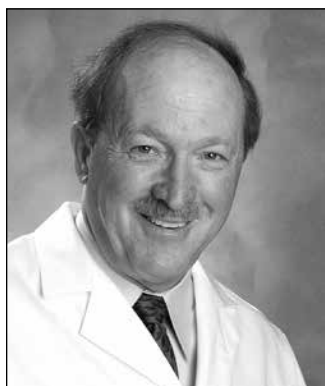
When Boland took over for Quigley, he became the head team physician and orthopedic surgeon for Harvard's 41 teams. It was a huge responsibility to deal with all the medical problems that occurred. In the 1970s and 80s, well before the seriousness of head injuries gained national headlines, under Boland's leadership Harvard already had a "three strikes and you're out" policy: one concussion meant one week out from the sport; two meant out for a season; and three meant out of the sport permanently. In 1986, Boland got an offer that was "impos-

sible for a sports medicine guy to turn down” and returned to the MGH to help care for the New England Patriots and Boston Bruins teams (Boland, personal communication).

A warm, unpretentious person whose New England accent never left him, a raconteur of Harvard athletic history and sports medicine, and a bibliophile, Boland was a “giant” in the field. He was president of the American Orthopaedic Society for Sports Medicine and president of the Herodicus Society, a name he proposed. (In the fifth century BC, Herodicus became a physician after being an athletic trainer, probably the first sports medicine specialist.) Boland resisted high-volume medical care; his wife, who left an academic nursing position at Salem State College to be his office manager for 18 years, shared the same vision. As a consummate teacher, he gave his mentees “must read” books, including *Doc: Then and Now with a Montana Physician* written by another life-long learner that Boland epitomized, Dr. Ronald E. Losee (Losee 1994).

Thomas S. Thornhill

Thomas Thornhill, born in Charleston, West Virginia, joined the Robert Brigham staff in 1978. He would later succeed his mentor, Clement Sledge, as chairman of the Department of Orthopedic Surgery at the BWH. He attended Williams College and Cornell University Medical College. A fortuitous experience as a fourth year medical student put



Dr. Thomas Thornhill

him in one of the laboratories first studying Norwalk virus – a particularly virulent virus that causes diarrheal illness. His early journey in medicine was strongly influenced by role models in neurology (fellow squash player from Cornell, Fred Plum) and transplant surgery (Francis Moore at the Peter Bent Brigham), as well as by Arthur Hall, Stillman, and Sledge. As a medical intern, he took care of the legendary baboon used in experiments that helped pave the way for modern transplantation surgery.

Thornhill so impressed Sledge that Sledge arranged for him to work for six months as a surgical resident in the Newmarket General Hospital and Addenbrooke's Hospital in England – environments in which he was able to amass a broad range of surgical experiences. Prior to entering the Harvard Combined Orthopaedic Residency Program, Thornhill spent two years at the National Institutes of Health where he continued to work on virus particles, using immune electron microscopy to study the structure and function of the Norwalk virus.

During his orthopedic training from 1975 to 1978, Thornhill adapted these techniques to studying cartilage antigens, under the direction of Henry Mankin at the MGH. Following his orthopedic fellowship with Sledge, he worked with Eugene Lance studying techniques of mixed lymphocyte-chondrocyte cultures and subsequently used these techniques to study mechanisms of inflammation in rheumatoid arthritis and the biological response to implant materials. With Myron Spector, he developed a canine model in order to study agents that block the biological response that causes osteolysis and loosening around joint implants.

Because of his medical training, Thornhill got involved in the orthopedic management of patients with complicated medical issues. He was an expert on the orthopedic problems of patients with renal disease and those on dialysis. He also worked with hematologists in the treatment of orthopedic problems in patients with hemophilia, leukemia, and myeloproliferative diseases.

He served as chair of the American Shoulder and Elbow Surgeons and was elected president of the Knee Society. He received the 1987 Frank Stinchfield Award from the Hip Society for his work on osteonecrosis. Before returning to the BWH as its chief of orthopedics, Thornhill chaired orthopedics at the New England Baptist Hospital and at the New England Deaconess Hospital. In 2000, he became the sixth John B. and Buckminster Brown Professor of Orthopedic Surgery at the BWH.

Hand and upper extremity surgery

The surgical management of hand problems had its beginnings after World War II when Major General Norman Kirk (1888-1960) recognized the need to repair and rehabilitate veterans with traumatic and combat hand injuries and established nine centers throughout the United States for this treatment. By 1948, the individuals involved with these centers established the American Society for Surgery of the Hand. Although hand surgery was done in cases of traumatic injury, it was rarely if ever considered or done as a treatment for arthritis disorders until decades later. When it did come on the scene, the Robert Brigham was one of the major centers in America specializing in this area.

The need was great. Osteoarthritis of the finger joints is common, and systemic arthritis disorders such as psoriatic arthritis, systemic lupus, and scleroderma can affect the wrists and fingers. Rheumatoid hand disease is so characteristic that experienced clinicians can make the diagnosis of rheumatoid arthritis shaking the patient's hand. People



"The staff had fun at the hospital. Maintenance and housekeeping used to have pretty rambunctious Christmas parties in the old carpenter shop. Somehow, one guy managed to fall through a skylight and into the kitchen, and he landed in a vat of clam chowder. The woman who was tending it watched him descend into her clam chowder. Her immediate response was, 'Hey, get out of my clam chowder!'"

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with rheumatoid arthritis invariably have wrist and finger involvement as well as deformities of the hand. Often distressed by the hand's appearance, they may lose dexterity for fine movements, the ability to grip or pinch objects, or the ability to hold things firmly and without pain.

At the Robert, surgery focused on the hand and upper extremities flourished. In April of 1968, Harvard put on a unique course at the Robert Brigham entitled, "Surgical Techniques in the Management of Rheumatoid Arthritis." The course was timed to coincide with the beginning of the hand service. The first three fellows on the service were all from South America, two from Venezuela and one from Argentina.

Over the years, some 80 surgeons received their training through the hand service and they now populate centers across the country. At its busiest, the service did up to seven cases in a day and 400-500 a year. Hand occupational therapy developed as well, and therapists Cindy Phillips, Betty Robinson, and Jeanne Melvin developed the specialized hand and finger splints and rehabilitation techniques to complement and supplement the surgical management.

Notable leaders in the program are profiled below.

Edward A. Nalebuff

Edward Nalebuff started the field of the surgical reconstruction of the hands of patients with rheumatoid arthritis at the Robert Brigham. Before him, few physicians understood the rheumatoid hands they were looking at or recognized that the lesions could be approached surgically; fewer still ventured to try surgical treatment. Nalebuff's journey to the Robert Brigham could hardly have been planned.

Born in New Jersey, he and his twin brother, Donald, were sent to Boston for college by their father, a dentist, so that they might both go to Tufts Dental School. As fate would have it, Ed Nalebuff was left-handed at a time when there were no dental instruments made for south-paws. His brother, who was right-handed, was able to pursue his father's plan for him and went to Tufts Dental School, but – tiring of dentistry – eventually went to Yale School of Medicine and on to a career in ear, nose, and throat surgery.

Edward took a shorter path, graduating from Tufts University and then attending its medical school, graduating in 1953. After a surgical internship at Yale, he joined the air force in 1954 and was stationed at Keesler Air Force Base in Biloxi, Mississippi, where he did obstetrics and gynecology for two years before returning to Boston to complete orthopedic training at Tufts. During this period, polio and cerebral palsy were usually the only hand problems that an orthopedic surgeon might encounter during training.

Nalebuff finished his training and was fortunate enough to receive a National Polio Foundation Award, which was given to outstand-

ing candidates under 35 and supported 15 months of advanced orthopedic training wherever the awardee wished. Nalebuff, who wanted to eventually practice in Boston, chose the Peter Bent Brigham and Children's Hospital Boston program, led by William Green. Married with one child, he received a salary of \$445 a month. In the last six months of his training, he was selected as chief resident of surgery at the Peter Bent Brigham. One of his interns was Joseph Barr Jr., who introduced Nalebuff to his father, Joseph Barr Sr. (1901-1964), an orthopedic surgeon at the MGH best remembered for his work with William Jason Mixter (1880-1958) on the classic description of the herniated lumbar disc (Mixter and Barr 1934). The senior Dr. Barr, impressed by young Nalebuff, gave him an opportunity to join the MGH staff. In solo practice at the age of 32, Nalebuff learned of an orthopedic position at the Robert Brigham from William Elliston (1903-1984) of Children's Hospital Boston, and the rest is medical lore.

In 1960, the Robert Brigham had 95 beds, many occupied by patients with rheumatoid arthritis who were admitted for bedrest. This allowed Nalebuff to see every possible hand deformity of rheumatoid disease. The extent and size of his experience dwarfed anything seen or written before. For instance, extensor tendon ruptures in rheumatoid arthritis were first described in 1948 in two patients, and five cases was felt important enough to be a lead article in a journal. At the Robert Brigham, it was a commonly-seen complication of the disease.

When Nalebuff arrived, there were no orthopedic hand surgeons in Boston and hand surgery was done by general or plastic surgeons. The senior medical clinicians did not refer patients to him for hand surgery for the first seven years after he came. Nalebuff recalls John Kuhns, who was nearing retirement, saying, "Son, you can make the hands look better but not work better!" (Nalebuff, personal communication). Theodore Potter, then 48, was more optimistic and encouraged Nalebuff's interest and focus on the hands when only two others in the country were doing so – Adrian Flatt, author of *Care of the Rheumatoid Hand*, (Flatt 1974) and Mack Clayton, who specialized in problems of the thumb.

With access to almost unlimited patient material, Nalebuff compared the opportunity to being in a candy store. He set about to systematically and methodologically describe and classify the countless hand deformities in rheumatoid arthritis, including their presentations, course, and patho-anatomy at surgery. His classification scheme for rheumatoid hand deformities still stands as a major achievement in the field (Nalebuff 1968; Nalebuff and Potter 1968; Nalebuff and Millender 1975).

Nalebuff developed novel procedures to treat pain and restore and improve function. He filmed a technique for stiff swan-neck rheumatoid deformities and showed it at the 1962 Atlantic City meeting of the American Rheumatism Association (now the American College of Rheumatology). He continued to hone his techniques and, with support from area foundations, went to learn first-hand from masters such as Guy Pulvertaft (1907-1986) at the Derbyshire Royal Infirmary in Derby, England; Claude Verdan (1909-2006) in Lausanne, Switzerland; and Kauko Vainio (1913-1989) at the Rheumatism Foundation Hospital in Heinola, Finland – a 300-bed hospital for patients with rheumatoid arthritis.

Nalebuff was a colorful, enthusiastic, charismatic figure. At one point, he lost a tremendous amount of weight and began offering his wardrobe to anyone who was his previous size. One of the residents accepted and embarrassed Nalebuff by wearing one of his jackets to an “At Home” and telling everyone where he got it. Nalebuff’s parents collected 1880s New England Art Glass and they passed on their collection and this passion to their son. Nalebuff donated a large portion of his collection to various museums, including the Toledo Museum of Art.

In 1967, the Robert Brigham was selected as one of nine centers in the country to use the new Swanson silicone finger prosthesis, which replaced destroyed metacarpophalangeal (MCP) joints in the rheumatoid hand. The damaged MCP joints put the patient at risk for joint dislocation and deformity of the fingers. The early results were mixed and caused some controversy, as the view of the operation’s usefulness differed between rheumatologists and surgeons. However, Nalebuff endured and the implant surgery gained popularity. As with other surgical interventions used in arthritis, long-term studies and follow-up are

essential in order to understand the overall impact on patients. It was not until some 40 years later that the Swanson arthroplasty's real role in management could be defined. For most patients, it improved hand deformities and some physical measures, but did not improve hand function when compared to medical management (Chung et al. 2009).

In 1995, Nalebuff received the Marian Ropes Award from the Massachusetts Chapter of the Arthritis Foundation. In 2008, he gave the Founder's Lecture at the American Society for Surgery of the Hand, and in 2010 he was named a Pioneer in Hand Surgery by the International Federation of Societies for Surgery of the Hand. He eventually returned to Tufts, his alma mater, and still has an active practice at the New England Baptist Hospital, an orthopedic specialty hospital located on the grounds of the former Robert Breck Brigham.

Lewis Millender

Nalebuff's colleague in the program was Lewis Millender (1937-1996), a native of Monroe, Georgia, and a graduate of Emory University School of Medicine (Long 1996). Millender came to Boston to do a hip fellowship with Otto Aufranc at the New England Baptist Hospital. But in 1970, when Millender's fellowship was to start, Aufranc developed myasthenia gravis and could not take on the trainee. Nalebuff offered Millender a hand fellowship, launching what for Millender what was to be a distinguished, though abbreviated, career as a hand surgeon. Commenting on Millender's untimely death at the age of 59, Nalebuff noted, "Dr. Millender contributed enormously to the understanding and treatment of patients with rheumatoid arthritis of the hand and wrist. Not only was he a meticulous surgeon, but he was also a gifted teacher and helped train scores of hand surgeons now practicing throughout the US" (Long 1996). A few years before his death, Millender edited a book on work-related injuries of the upper extremities, authored by a multidisciplinary panel that included physicians, specialists in rehabilitation and industrial health, an occupational therapist, and an attorney (Millender et al. 1992; Crenshaw 1993).

Barry Simmons

The specialty that Nalebuff and Millender set in motion would be led and developed under the leadership of an individual who had rotated through the Robert Brigham in the early 1970s. Barry Simmons, a general orthopedic surgeon for the first decade of his career, oversaw important developments in the evolution of the specialty. Under his leadership, the training of specialists in arthritis reconstruction broadened to the surgical management of the entire upper extremity, including the shoulder, elbow, wrist and fingers, and the number of women in the program expanded. He saw to it that the Brigham and Women's program maintained its preeminence as one of the major training venues in arthritis reconstructive surgery. At the 25th anniversary of the program, more than 50 hand fellows had been trained and now hold important positions throughout the country.

Simmons' life began near the old Robert Brigham in Brookline, Massachusetts. His parents were Jewish immigrants from Germany and Lithuania, with music and art in their blood. His father played piano in the bands of the era and attended the New England Conservatory of Music before entering Tufts Medical School in 1918. One of two children, and a twin, Simmons attended Brookline High School; he graduated from Harvard College in 1961 and from Columbia University's College of Physicians and Surgeons in 1965. Simmons returned to Boston as an intern in medicine at his father's alma mater. He raised some eyebrows when he decided to pursue orthopedics, which was hardly a popular specialty at the time. When Simmons asked the legendary infectious disease physician, Louis Weinstein (1908-2000) for a letter of recommendation, Weinstein is said to have quipped, "You're too good to go into orthopedic surgery!" (Simmons, personal communication)

The most influential factor in Simmons' decision was a fourth year rotation in orthopedics with the colorful, hard-drinking, chain-smoking Harrison L. McLaughlin (1906-1970) – a general surgeon who probably taught more about orthopedic fracture care than any other orthopedic surgeon in the 1950s and 1960s.

Knowing he was eventually going into orthopedics, Simmons did a year of residency in general surgery at the University of Califor-

nia, San Francisco. The years were 1966-67 and San Francisco was at the height of the counterculture movement. He met his eventual wife, Laura, a guitar-playing Canadian from New Brunswick, on a blind date a week before he was to report for active duty in the navy.

Simmons spent most of the next year on a navy supply ship in the Sixth Fleet in the South China Sea and also ran a clinic in a small marine base just south of Hue in Vietnam. In his final year in the service, he had gotten married and was stationed with his wife at Treasure Island in San Francisco Bay.

After the service, Simmons did a research fellowship in orthopedics with surgeon Judah Folkman (1933-2008), the discoverer of angiogenesis factor, and then completed the Harvard Combined Orthopaedic Residency Program in 1973.

The year after, he and his wife sold their car, cashed in his life insurance policy, and bundled up their daughters, aged 4 and 2, and booked passage on the *USS France*. Simmons did a year-long hand fellowship in France and a trauma fellowship for three months in Basel, Switzerland. With few formal arrangements and no command of French, he spent six months under the legendary Professor Raoul Tubiana in Paris. The two bonded (possibly facilitated by Simmons' outspoken daughter's comment about an original Giacometti in Tubiana's large collection. When she asked Tubiana if he was the artist, and he said no, she offered: "Good, it's not very good.") Simmons' English was useful in disseminating Tubiana's work into English-speaking venues. Scrubbing in with the master in an operating room with a view of the Eiffel Tower, Simmons refined his craft, became a devotee of art and things Gallic, and made a life-long friend.

Simmons' first staff appointment in 1974 was divided between the Robert Brigham, the Peter Bent Brigham, Children's Hospital Boston, and Boston's Beth Israel Hospital; he also did consultations at the Veteran's Administration Hospital in West Roxbury and at the Harvard Community Health Plan. Academically, he focused on congenital hand deformities and injuries of children, directing the orthopedic hand surgery service at Children's Hospital Boston.

By 1982, Simmons had consolidated his activities as chief of the hand and upper extremity service at the Brigham and Women's Hospital. He inherited the patients who remained at the Brigham after Nalebuff moved to Tufts, and he concentrated on arthritis and outcomes research related to hand surgery. The latter was a hallmark of the orthopedic department under Sledge, and the hand surgeons had a particularly productive collaboration in this work not only with their colleagues in surgery, but also with Jeffrey N. Katz and others in rheumatology. In hand arthritis surgery, outcomes research was a paradigm shift from the focus on only anatomic restoration, and Simmons was a leader in this movement. In the American Academy of Orthopaedic Surgeons, he played a major role in developing the four musculoskeletal outcomes instruments that are used internationally, and an instrument on patient satisfaction and functional improvement in the treatment of carpal tunnel syndrome, a widespread and growing occupational condition.



These surgeons and those who followed built on the foundations of orthopedic surgery that were first established at the RBBH and that took root under Sledge's leadership. They ushered in the modern era of joint replacement surgery; pioneered innovations such as radiation synovectomy; began the field of joint replacement in children with arthritis; developed the techniques to design and test materials used in joint surgery; and set in motion processes that led to the use of standardized outcome measures in joint replacement surgery. Their legacy continues today at Brigham and Women's Hospital.

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Training Rheumatologists and the Beginnings of the Targeted Experimental Therapeutics Program

The Robert Breck Brigham Hospital was the first teaching hospital in America devoted to the care of patients with arthritis and musculoskeletal diseases and, as such, became one of the most important educational sites for all the disciplines involved with the care of such patients. It provided the formative educational experience for countless Harvard medical students; interns and residents in surgery and medicine; fellows in orthopedic total joint arthroplasty and rheumatology; and students in occupational and physical therapy and nursing. Its traditions and commitment to graduate medical education was rooted in its long history of providing thoughtful and humane care, and in its commitment to discovery and to a critical evaluation of its own practices.

Rheumatology training

Students from Tufts Medical School and Harvard Medical School had attended ward rounds at the Robert during the 1930s, but in 1966, the hospital became an official Harvard teaching hospital. The Department of Rheumatology merged in 1975 with that of Beth Israel Hospital, another Harvard teaching hospital which had strong community ties. Between 1982 and 2011, trainees in rheumatology from Beth Israel and Brigham and Women's Hospital (BWH) rotated through both hospitals and attended the teaching venues at both.

Rheumatology was a late-blooming sub-specialty of internal medicine, and several of the country's "first" rheumatologists, such as Ted Bayles and Sydney Stillman, came from the Robert Brigham. Arthur Hall (1925-2013) and Peter Barry were part of the early group



Dr. Arthur Hall, shown here examining a patient, was known for his expertise in both clinical care and teaching.

of academically-oriented clinician teachers who, by their approach to patient care, profoundly influenced the following generations of rheumatologists as the field became a formal specialty of medicine. Dr. Hall's approach to teaching foreshadowed the age of evidence-based medicine that would dominate the teaching programs in subsequent decades. His skepticism about bland assertions of cause and effect and about unsupported testimonials of delight for a new therapy was legendary, and led to what was for many years one of the rites of passage for new fellows. In "Dr. Hall's Seminar," young physicians were encouraged to think critically about a topic of their choosing – examine a shibboleth, do a literature review, or explore an area of interest. Hall presided over the sessions, puffing away on his pipe (even after hospitals banned smoking). Some of these presentations became publications. Hall and Barry established the tone and foundation of the rheumatology training program that would subsequently be led by Ronald Anderson and his colleagues

Jean Jackson, Patricia Fraser, Michael Weinblatt, Jonathan Coblyn, and William Docken. They would be the heart of the teaching and patient care program for generations. Each in their own unique way and force of personality showed additional role models to younger physicians during their formative years in the young specialty; this included the physician-educator, physician-scientist, private practitioner, and physician-leader. As the Robert Brigham's identity as a stand-alone hospital was ending in 1980, the pharmacologic options to treat such important and crippling disorders as rheumatoid arthritis were limited to treating the symptoms, not the underlying cause, and consisted of about a half-dozen drugs of marginal benefit. But the hospital turned a philosophical corner in setting its objectives more aggressively when Austen asked Michael Weinblatt, a bright clinician, to begin a program in experimental therapeutics that launched a whole new era and philosophy of medical therapy for rheumatic conditions.

Ronald J. Anderson and early trainees

Ronald Anderson learned his rheumatology from Arthur Hall, Sydney Stillman, and Ted Bayles – the wise triumvirate from the early hospital staff. He in turn founded, led, and was the soul of the clinical training program in rheumatology at the Robert Brigham, and, after the merger, the Brigham and Women's Hospital, from 1971 to 2003, when Lloyd Klickstein and then Simon Helfgott took over the reins. Over 32 years, Anderson taught generations of medical students, young physicians, and colleagues the art and science of diagnosing and caring for patients with rheumatic disorders. They in turn became the models of the clinician-teacher in their respective communities, a feat akin to the training of young scientists in the laboratory



Dr. Ronald Anderson

sciences by Austen, David, and Schur. Anderson's impact was international and similar to the great teachers such as Marshall Wolf and Daniel Federman at Harvard Medical School, at a time when there was no established track for clinician teachers. Anderson accomplished this during a period when rheumatology was still a developing subspecialty. Although the precursor organizations to today's American College of Rheumatology began meeting in the 1920s and 30s, the first formal examination for rheumatology board certification was not administered until 1972. Thus, Anderson was one of the first clinicians to train doctors who were aspiring to become specialists in rheumatology.

As an educator, Anderson invented new educational venues that took advantage of the full resources of the major academic center down the hill, The Peter Bent Brigham Hospital, and the specialists who came up the hill to consult on the hospital's patients. In addition to continuing "Dr. Hall's Seminar," Anderson led teaching conferences in the Socratic style, where younger attendees heard diverse and often contrary approaches to real-life problems and diagnostic dilemmas from the senior attending staff. Their arguments were



Anderson was one of the first clinicians to train doctors who were aspiring to become specialists in rheumatology.

both humbling and object lessons in themselves. These sessions included Rheumatology Grand Rounds (modeled after Medical Grand Rounds) and Ambulatory Center Rounds, which covered common or difficult outpatient rheumatology problems. Radiology Conference brought the radiologists together with the physicians who ordered the

studies and helped both interpret the information from emerging technology in imaging. A Pathology Conference used autopsy and synovial and other tissue biopsies to bring pathology and rheumatology staff together for an exchange that enhanced the understanding of each, and Consult Rounds highlighted the week's most illustrative rheumatologic cases from hospitalized patients, supplemented by a review of the pertinent literature. Anderson was the glue and the master of ceremonies for all of this; he never missed a conference in 32 years.

Anderson's father was a Scottish immigrant who was born in Glasgow and who went to the University of Glasgow (home of Adam Smith and *The Wealth of Nations*). At age 16, his father went to fight in France during World War I. He was to spend two years as a prisoner of war in a labor camp in Bavaria working on roads and railroads. His son would later recall that his father, like many who had such experiences, rarely spoke of them (Anderson, personal communication). Anderson's mother was born in Cleveland and lived with her family in Sheffield, England – a steel town – during the 1920s, where she met her future husband. After they married, they settled in Summit, New Jersey. Anderson's father was a CPA for Price Waterhouse for a few years and eventually became a banker for the local Summit Bank.

Ron Anderson went to public schools in Summit and then studied psychology at Williams College, graduating in 1958. He served in the Marine Corps briefly before he went to Albany Medical College, where he graduated in 1963. After residency training at the Philadelphia General Hospital and Mary Hitchcock Memorial Hospital at Dartmouth College, he was named chief resident in medicine at Philadelphia General. He first came to Boston in 1967 as a rheumatology fellow, working in John David's lab. He was later to reflect that during this experience, after breaking expensive laboratory glassware, he found that his true passions were caring for patients and teaching.

His first job after training at the Robert Brigham was at the then new University of Connecticut School of Medicine at Farmington, where he was director of clinical clerkships and oversaw a group of Scandinavian house staff at the New Britain General Hospital. He was recruited back to the Robert Brigham in 1971 as the training of young physicians was getting more active, and he never left. When he arrived, there were three clinically active fellows: Larry Anderson (no relation), Jean Jackson, and Richard Rynes. Douglas Fearon, Hyman Tannenbaum, and Lou Simchowicz came in 1972. The first full-time clinical fellows were Ed Medoff and Carolyn Bell.

As with any new program, in the typical Harvard way where “every tub has its own bottom,” Anderson was faced with the challenge of funding a training program for young physicians during the period

Excerpts from *The World According to Ron*

Sayings

- Enzymes are for digestion, not for diagnosis.
- All shoulder pain is self-limited.
- A chance to inject is a chance to cure.
- The key to a good life is not to be scheduled to be in two places at the same time.
- Neck pain always gets better.
- I don't believe that I have ever seen this but I'm sure that it has seen me.
- Once you make a diagnosis, you stop thinking.
- X-Rays of the spine are always positive.
- The 4 D's of a Charcot joint: Debris, Disarray, Destruction, and De absence of osteopenia.
- The course of erythema nodosum is like a bouncing ball. Each bounce is less high.
- Said about many patients: One of the nicest guys you'll ever meet

Explanations to Patients

The Gout Talk

Gout is like having a handful of matches which occasionally will catch on fire. Indocin is used to put out the fire when it occurs, colchicine dampens the matches so they are less likely to catch on fire, and allopurinol slowly removes the matches so that they will eventually disappear.

The Glucosamine/Chondroitin Talk

Taking glucosamine and chondroitin for osteoarthritis is somewhat like eating hair when you are bald.

The "I-don't-know-what-you-have" Talk

The great body of medical knowledge is based on those conditions which don't get better. Often people get sick and get better and we never know why. Trust me.

when they were learning how to diagnose and manage various rheumatic conditions. He developed a “self-funded” program in which fellows’ salaries came from clinical activities in the Arthritis Center rather than from a research or training grant. The first fellow was Ed Medof in 1973-74. Medof was an MD, PhD from New York University who wanted a clinical year before going into the lab for further training. His year was a test of the concept and showed that it could work. He had a good clinical experience and continued his lab work at the University of Illinois. The second fellow and the first woman in the program was Carolyn Bell who had worked in Peter Schur’s lab and then was chief resident at Tufts-New England Medical Center from 1973-74 before her fellowship at the Robert in 1974-75. She went to the University of Wisconsin where she had a distinguished career in rheumatology, working on medical education, shared decision making, and the antiphospholipid syndrome. In 1975, David L. Freeman (who passed away in 2012) came for a second year of rheumatology training after a lab year at Boston University in a cohort that included Bill Docken and Diana Post. Freeman became the only rheumatologist at the Carney Hospital for many years before going to the Lahey Clinic. An accomplished pianist and social activist, he played for charities and nursing homes. With his wife, Amanda, a physician, he ministered to needy families after natural disasters in Latin America. After his wife’s recovery from a life-threatening surgical complication, he found inspiration and solace in literature and co-edited an anthology of traditional and modern Jewish writing on illness and healing (Freeman and Abrams 1999).

The second woman in the program was Post who almost willed herself to become a rheumatologist. Born in Brooklyn, she trained on the Harvard Medical Service II and IV (Finland 1982) at Boston City Hospital (BCH) where she, Laura Wexler, Barbara Gilcrest, and Cathy (Minoch) Wilfert were its only women house staff before the service closed in 1975. At BCH, she had done a rotation with and was inspired by Don Goldenburg, a rheumatologist at Boston University. After residency, Dr. Paul Beeson arranged for Post to visit the famous Nuffield Orthopaedic Centre in Oxford, England. There, she had her eyes opened to how rheumatology care might be ideally organized. Finishing her resi-

dency at the Massachusetts General Hospital, her resolve to pursue rheumatology strengthened and she called Anderson regarding a fellowship. She was accepted but without a salary; before Anderson found funds, she supported herself by moonlighting. At the Robert, over a mutual patient, she met and eventually married Hal Churchill, a hematologist from the Peter Bent Brigham. Not interested in research, she did another year at Beth Israel Hospital before going to Mt Auburn Hospital. There she was the only rheumatologist until 1993. That year, she had an epiphany of sorts and left her solo practice after waiting on the phone to get prior approval for a 12-dollar wrist splint for a patient with carpal tunnel syndrome. In the course of the call, her reviewer asked, “How do you spell, ‘wrist?’” It is a tale that many physicians who were practicing then can relate to and just the beginning of the efforts to contain rising costs.

Anderson used his extensive practice for clinical research. He described the pattern of joint involvement over the years of a patient’s course with rheumatoid arthritis – a milestone paper in the clinical literature, and one of tremendous importance to patients (Roberts, Daltroy, and Anderson 1988). He was the first to describe asterixis (a particular type of tremor) as a physical manifestation of salicylate toxicity (Anderson 1981). In a classic piece of medical sleuthing, he diagnosed the malady of Christina Olson (1893-1968), who was depicted in the iconic Andrew Wyeth painting, *Christina’s World* (Anderson 2007). (By studying historical records of Olson’s life, Anderson concluded that she had suffered from type I hereditary motor sensory neuropathy, also known as Charcot-Marie-Tooth disease.) As a broadly trained internist, Anderson could rarely be stumped in medical trivia by the most senior physician or visiting medical dignitary.

Anderson was a colorful, beloved teacher – a Will Rogers persona – who had a gift not only for making the study of rheumatology and medicine enjoyable, but also for enjoying life and making fun of himself. Like his father, he conveyed warmth and kindness and was never given to anger or disparaging remarks. He frequently introduced a case by saying of the patient, “He (or she) was the nicest person you’d ever want to meet,” and one got the sense that the feeling was mutual. On his 60th birthday, he was given a “belly gram” and he broke spontaneously into

his own rendition with the belly dancer who had been brought in to give greetings. Fit and trim, for years he and his wife, Barbie, rowed regularly at the Cambridge Rowing Club. At the Head of the Charles, the annual rowing regatta on the Charles River that showcases collegiate teams and dedicated amateurs, Anderson once rowed in the 50-year-old group, got turned around at the start of the race, and never caught up. He finished dead last and the account never failed to bring hilarity to listeners. He and Barbie welcomed new fellows in rheumatology in their Wellesley home every June with a sumptuous dinner. It was typical of the personal interest Anderson took in every trainee in the program. He would sit down one-on-one with each new student and resident on rheumatology rotation, teaching a complete mini-course on how to approach patients with arthritis and musculoskeletal complaints, and going over the major diagnoses of the field and their management. The highlight of the year for the fellows was a field trip to Portland, Maine, to see rheumatology “in the rough” at the exemplary practice of Paulding Phelps and Larry Anderson, which was topped off with lobster on Phelps’s boat.

A fun-loving storyteller at rounds, seemingly with a photographic memory, Anderson had an uncanny ability to remember every patient that he ever saw and to find something one could learn from each one. His pearls were immortalized by former fellows who presented him a tome of his sayings, “The World According to Ron,” at an American College of Rheumatology reception in San Antonio in 1993 (see sidebar, page 176). One of his trainees, William Docken, an admired clinician and teacher in his own right, spoke fondly about Anderson when Anderson received the Marian Ropes Award in 2003 :

Intellectual integrity is another reason for his influence. Though his fund of information about our field is exemplary, you will only hear from Ron what he knows and understands...and if he doesn’t know an answer or understand a concept, he is candid and fearless about asking. This openness to inquiry also informs another remarkable quality, a continuing curiosity. Ron is [a] regular, front-row attendee at our grand rounds, no matter how arcane the subject; a regular, animated and animating presence at our weekly

clinical conference; and a regular participant at monthly intra-city rounds – an exercise where difficult and unusual cases are presented on a rotating basis by the various Boston-area teaching hospitals (the day of which he characteristically broadcasts an email announcing that he will be driving and offering a ride to any of the fellows who also want to attend). And finally, all of these qualities – enthusiasm, integrity, curiosity, wisdom – are infused with something more – that of a personal touch. Ron’s recall of the personal aspects of the lives of those of us who have worked with him are astounding – and I never cease to marvel at this quality as he sees and talks with graduates of our program, not just pressing the flesh, but honestly interested in spouses, children, and the non-rheumatologic events of our lives.

“Mentor” is an overused word these days, especially in the groves of academe. But it’s worth recalling the origins of this word, which derives from Homer’s *Odyssey*. In *The Odyssey*, Mentor is in fact a character, a person who is the loyal friend and wise advisor of Odysseus and the teacher and guardian of Odysseus’ son, Telemachus. In Ron’s enthusiasm, integrity, curiosity, wisdom, and friendship, he has been our mentor in the truest sense – teacher without peer, advisor, friend – genuine mentor to more than a generation of rheumatologists – and thus an authentic leader in the fight against arthritis. (Docken, unpublished comments)

In 2012, Anderson received the first Distinguished Fellow Program Director Award from the American College of Rheumatology, recognizing his “outstanding contributions in the mentoring and training of future rheumatologists” (American College of Rheumatology 2012). In 2013, the Ronald J. Anderson Fellowship in Rheumatology was established at BWH.

Jean Jackson

Jean Jackson (1942-2008) was a fellow during Anderson’s early years in the training program, and she went on to become one of the program’s illustrious teachers. A daughter of Finnish immigrants who lived on a Rhode Island farm, she spent eight grades in a one-room schoolhouse. Her teacher became a model for her career as she would care for both

young and old patients, and she would be instrumental in educating young physicians in the practice of rheumatology.

Following her medical residency at the University of Maryland, Jackson came to the Robert Brigham in 1972 to do her rheumatology training. She was the hospital's first female staff rheumatologist. After spending a year back in Maryland as chief medical resident, she returned to Boston to launch her career. She had missed the academic environment of Boston and wanted to establish a career in rheumatology in



Dr. Jean Jackson

a place that encouraged the interdepartmental collaborations that she had experienced at the Robert, where rheumatologists interacted with orthopedists in the same way thoracic surgeons do with cardiologists. She was also interested in pediatric rheumatology, and returning to the RBBH would allow her to pursue this interest through the hospital's affiliation with Children's Hospital Boston.

As the only woman in her medical school class of 120 students, Jackson was once asked why she was taking up space in the class when qualified men could do the job. Women physicians had few or no female mentors, nor role models who had succeeded in a man's world. However, Jackson was fortunate to meet Mary Betty ("Marty") Stevens (1929-1994), the first female rheumatologist at Johns Hopkins Medical Center and the first woman to be appointed division chair in that hospital's Department of Medicine. At the University of Maryland, while Jackson was chief resident, Stevens presided over the rheumatology conferences. Stevens made Jackson feel as though they were truly colleagues, and Jackson learned many teaching techniques from watching her, including how to make rheumatology interesting for everyone. Jackson's other role model, perhaps at a distance, was Marian Ropes, who, like Stevens, was a pioneer. Ropes was the first female resident at the Massachusetts General Hospital, and eventually became President of the American Rheuma-

tism Association – the first woman to hold that post. The Massachusetts Chapter of the Arthritis Foundation honors clinicians each year with an award that bears her name.

Like her mentors, Jackson was a demanding and inspiring bedside teacher. A tall, imposing woman, she was always enthusiastic and upbeat. She was happiest discussing a difficult case, opening up areas that no one had thought of, and stressing the fundamental importance of getting the patient's history and doing a thorough examination and meticulous follow-up. She was the consummate role model in the tireless follow-up on the minutia of patient care. Battling breast cancer, she retired from active practice in 2004 and passed away in 2008. The Brigham and Women's Hospital inaugurated the Jean M. Jackson Distinguished Bedside Teacher Award in 2008 and the medical house staff voted Ronald Anderson as its first recipient. On the occasion of Jackson receiving the Marian Ropes Award in 2005, Janalee Taylor of the American Juvenile Arthritis Organization noted: "You have earned enormous respect from those who understand how devoted you are to the practice of pediatric rheumatology. Your patients universally feel your humanistic approach is unmatched. From discussions with your patients and their families, the common response is there was no such thing as a time limit when it came to seeing Jean; she spent as much time as each patient needed. And so every patient in the waiting room waiting to see her knew, once they got in that exam room, they would be treated as a whole person with compassion and empathy. Every patient felt she was worth waiting for."

Patricia A. Fraser

Patricia Fraser joined the full-time clinical faculty in 1979. Her father immigrated to America from Guyana and her mother from Jamaica; he to work all his life in the US Post Office and she to rise in the Board of Election for New York City. Fraser was the first African American rheumatologist at Harvard. Born in New York, she received an undergraduate degree in biology at Manhattanville College and a medical degree from Columbia University College of Physicians and Surgeons. She became interested in rheumatology while doing an elective with

E. Carwile LeRoy (1933-2002) during her last semester in medical school. She trained in internal medicine at Harlem Hospital before coming to the Robert Brigham in 1977 and completing a research fellowship in 1979. While a junior faculty member with a young family, she completed two master's degrees at the Harvard School of Public Health, one in public health and the other in biostatistics. She was the scientific director of the juvenile/adolescent rheumatology program clinic from 1988 to 2005 and its director from 1991 to 2005.



Dr. Patricia Fraser

Fraser's major research interest was the causes of the marked difference in the prevalence of systemic lupus erythematosus observed in African Americans. She was a molecular epidemiologist who used genetic markers to define the subsets of individuals who bear excess risk for lupus and the disparate health outcomes. Fraser examined environmental factors (such as viruses and toxic chemicals) thought to trigger connective tissue diseases in those with a genetic predisposition in the Carolina Lupus Study, and in a study of exposure to toxic waste in an African American neighborhood in Boston. Elegant, stylish, articulate, and brutally frank, she was known for her dry, ironic sense of humor. She married the BWH nephrologist, Edgar Milford. In 1997, she was named one of the "100 Top Minority Women in Science and Engineering" by the National Technical Association. In 2000, the Massachusetts Department of Public Health honored her with the Rebecca J. Cole Award for her work on health issues in the African American community. In 2005, she became medical director for pharmacovigilance/medical affairs at Genzyme Corporation.

Jonathan S. Coblyn

Another major figure in the clinical teaching program was Jonathan Coblyn who had trained under Frank Austen, went into practice, and



Dr. Jonathan Coblyn

then was recruited back in 1993 to become associate director of the Robert B. Brigham Arthritis Center at Brigham and Women's Hospital. This was during a period when the economic pressures on academic health centers required responsible management and innovations to protect humanistic and academic values. Coblyn's experience managing a private practice and his academic background made him the ideal leader in this task. In addition to leading the Robert B. Brigham Arthritis Center, he became the director of Clinical Rheumatology at the BWH in 1999.

Born in New York City, Coblyn attended Princeton University, graduating Phi Beta Kappa before going to Johns Hopkins University School of Medicine. He did his internship and residency in medicine at the Peter Bent Brigham Hospital and then went on to Stanford University Medical Center. In line to be chief resident in medicine at Stanford, he was persuaded by Austen to forgo that opportunity and to instead begin his investigative career in Austen's lab. Eventually, he found that his real interest was in patient care and he went into full-time practice until he was persuaded back on the faculty. Over his career, Coblyn received numerous accolades as a practitioner and was recognized as one of the top rheumatologists both locally and nationwide. He was a role model for young physicians in training and his no-nonsense, realistic thinking belied a generous heart and a critical mind that endeared him to generations of trainees and colleagues. He worked with Michael Weinblatt on the pivotal trials showing the effectiveness of agents such as methotrexate, leflunomide, and etanercept in the treatment of rheumatoid arthritis. As a practitioner, he had the experience of someone who managed his own staff and had learned to balance the books and survive in the era of increasing bureaucratization and cost containment in health care. He brought these skills to protecting the missions of teaching, research, and

patient services, as well as the sanity of his colleagues who were unaccustomed to the new accountability. At the Brigham and Women's, he led efforts to understand the economic ramifications of academic medical practice. He took on major administrative responsibilities beyond rheumatology at the hospital. In 2011, Coblyn became the first incumbent of the Robert Epstein-James Rubenstein Distinguished Chair in Rheumatology at the BWH.

Michael E. Weinblatt begins the experimental therapeutics program

Michael Weinblatt grew up in Baltimore and graduated from the Baltimore Polytechnic Institute, McDaniel College, and the University of Maryland School of Medicine. Like Jean Jackson, he had also been deeply influenced by Mary Betty Stevens. He trained at the Robert Brigham with Peter Schur and was recruited back from Bowman Gray School of Medicine to start a new program in experimental therapeutics focusing entirely on rheumatoid arthritis. In the 1970s, patients with serious systemic rheumatic diseases such as rheumatoid arthritis (both adult and juvenile forms), systemic lupus erythematosus, systemic vasculitides, scleroderma, and the like were being managed with a very limited armamentarium. Despite some successes in rheumatoid arthritis treatment, for most part, the patients were not "okay."



Dr. Michael Weinblatt

In rheumatoid arthritis, arguably the most important of these from a population point of view, there was a growing appreciation of its slow, inexorable, disabling course and the resulting impact on the quality of life. In a few places, the audacity to not accept the conventional wisdom nor the limited results of treatment, to look for its root causes and to actually cure and prevent the disease, was gaining momentum.

Frank Austen, who assembled physician scientists studying cellular and humoral immunity, recruited Weinblatt to take the labo-

ratory observations to the care of patients. He saw the possibilities of even failed therapies being instructive in the underlying mechanisms of disease. This interplay between the lab, the patient, and back to the lab would become known as translational research in the 1990s. Back then, Weinblatt and his colleagues in the laboratories of the Robert Brigham were demonstrating how to do it in an era when funding from the National Institutes of Health was insignificant, large pharmaceutical companies were just entering rheumatology, the rigorous methods for testing candidate agents were still evolving, and the bureaucratic requirements and oversight for controlled clinical trials in the treatment of rheumatoid arthritis were minimal. Weinblatt's program was singular in its focus on rheumatoid arthritis, and its research was done without trainees or a large research group, and took maximum benefit from a hospital with ample patients with the condition.

With his associate, Agnes Maier, and the clinicians in rheumatology, Weinblatt carried out one of the earliest critical evaluations of the use of methotrexate in patients with rheumatoid arthritis, and in a series of subsequent studies demonstrated its safety and long-term benefits in arresting structural joint damage. He used the clinical experience to see how various markers of inflammation were affected. Until then, methotrexate had been used only in cancer therapy and in much higher doses. Over the 1980s and 90s, methotrexate became the standard therapy in rheumatoid arthritis against which all others would be judged. Its use helped mark the beginning of a new era in rheumatic disease therapeutics, in which drugs and new biological agents went beyond providing just symptomatic improvement and gave patients an excellent chance of permanently arresting or controlling the disease, especially when therapy was begun early.

Weinblatt was a charismatic figure and a popular teacher and lecturer. He assumed all the top leadership positions in the specialty and worked tirelessly in the American College of Rheumatology to improve compensation for rheumatologists, and to honor facets of the specialty including master clinician, educator, and both bench and clinical scientist. He was an important consultant to the pharmaceutical industry. A dedicated biker, he rode across the USA over many summers to raise

money for charity. In 1997, Weinblatt shared the Arthritis Foundation's Virginia P. Engalitcheff Award for Impact on Quality of Life with Drs. Graciela Alarcon, Rex Hoffmeister, and Joel Kremer for his pioneering work. He was president of the American College of Rheumatology in 2000. In 2005, he received the prestigious Carol Nachman Prize in Rheumatology and in 2008 he received the American College of Rheumatology's Distinguished Clinical Investigator Award and was named the first incumbent of the John R. and Eileen K. Riedman Professorship in Medicine in the Field of Rheumatology at the Brigham and Women's Hospital.

William Docken

Born in Duluth, Minnesota, William Docken came east to attend Harvard College, majoring in English literature, and then went back to the Midwest to go to medical school at the University of Chicago, where he graduated in 1971. Trained in internal medicine at the Beth Israel Hospital in Boston, he served in the National Health Service Corps of the US Public Health Service, and was stationed at Mountain Top Area Medical Center in Snow Shoe, Pennsylvania. After a fellowship in rheumatology with Anderson at the Robert Brigham, he went into private practice with Peter Barry and was an elegant, urbane role model of the academically-oriented private practitioner at the Beth Israel Hospital for many years. He took on more responsibility for the rheumatology teaching program at the hospital as director of clinical rheumatology in 1994, and moved his academic base back to the BWH in 2000. A keen clinical observer, he had a major interest in polymyalgia rheumatica and giant cell arteritis.

Jerry M. Greene and the Veteran's Administration Program in Rheumatology

An important part of the clinical rheumatology teaching program for medical students, fellows, and house staff in the Harvard system occurred in the area's Veteran's Administration (VA) Hospitals. The Veterans Administration hospital and clinics, the largest system of health care in the United States, had a critical role in the care of the veterans who had served their country in the great wars. Many of their premier

centers had traditionally been linked to local medical schools. The Boston area was no exception. It had a multi-site, vibrant network of VA hospitals and clinics that provided a broad spectrum of inpatient and outpatient services.

Tufts, Boston University, and Harvard all had faculty, student, and house staff training based at the VA. The VA also provided “hard dollars” to many aspirant clinician scientists and clinician teachers at Harvard and Boston University. The VA’s support for clinical trials and career development and its centers of excellence in areas like geriatrics, rehabilitation, and more, provided enriching experiences for generations of clinicians and academics.

In rheumatology nationally, academic leaders like Ralph Schumacher, David Pisetsky, David Yu, David Wolfsky, and Robert Terkeltaub spent their entire careers in the VA. In the Harvard system, training in rheumatology and orthopedics at the VA got its start through the training program at the Robert Brigham, and continued to expand after the creation of the Brigham and Women’s Hospital. At Austen’s request, Ed Goetzl took a Harvard medical student with him to the VA hospital in West Roxbury and staffed a consultation clinic there from 1971 to 1973. Juan Canoso, Goetzl’s Boston University counterpart at a VA site in Jamaica Plain, was a popular teacher and an international expert and scholar in conditions of the bursae and tendons.

The rheumatology training of medical students, house staff, and fellows at the VA was fully implemented under the leadership of Jerry Greene. Greene grew up in Hannibal, Missouri. His father was a general practitioner who had graduated from Washington University and trained at Barnes Hospital. The elder Greene became an anesthesiologist and non-invasive cardiologist and volunteered in the South Pacific with the marines during World War II.

Jerry Greene attended the Massachusetts Institute of Technology (MIT) where he majored in “Course 7” biology, and minored in electrical engineering. It was the heady days of the 1970s at the beginnings of the biological revolution and molecular biology. Greene’s undergraduate advisor was David Baltimore, who shared the 1975 Nobel Prize in Physiology or Medicine with Howard Martin Temin and Renato

Dulbecco for the discovery of reverse transcriptase, essential for the reproduction of retroviruses such as HIV.

After MIT, Greene worked on muscle enzymology at Children's Hospital Boston with David Dawson, a neurologist who consulted at the Robert Brigham. After a few years, Dawson said to Greene, "You don't want to be a lab tech for the rest of your life!" and encouraged him to apply to medical school (Greene, personal communication). Greene went to Tufts University School of Medicine and, following graduation, was accepted into the medical house staff training program at the Peter Bent Brigham Hospital. For three months of his senior residency, he was chief resident at the VA hospital in West Roxbury.



Over his tenure, Greene grew the young rheumatology service at the VA into a vital partner to the Brigham fellowship program.

During his junior residency, Greene had elected rheumatology and found the arthritis patients appreciative and the staff, Ron Anderson and Don Holdsworth, "friendly, warm, human, and excellent teachers" (Greene, personal communication). He decided that this would be his specialty and he completed a fellowship from 1980 through 1982, along with Rowland (Bing) Chang and Robert Sands. He was appointed to a number of leadership positions within the VA, eventually rising to become chief of rheumatology for the entire VA Boston Healthcare System. After 20 years, Greene retired to be an editor at UpToDate but continued to see patients pro bono.

Over his tenure, Greene grew the young rheumatology service at the VA into a vital partner to the Brigham fellowship program. The VA led in the exploration of the role of skinny needle arthroscopy and ultrasonography in rheumatology. The large VA population also augmented the parent program by affording important experiences in injection therapy and managing crystalline disease, septic arthritides, and vasculitis. Young physicians who became leaders in their own right such as Patrick Whelan, Bonnie Bermas, Nancy Shadick, Jeffrey Katz, Monica Piecyk, David Lee, Paul Monach, and Branch Moody spent their formative years on rotation at the VA. Moody became a fixture in the program, following his patients for years after his fellowship ended.

Greene was the consummate clinician-teacher and was an important leader of Harvard Medical School's "Patient-Doctor" course, which teaches students basic physical examination and interviewing skills. His comments at Rheumatology Grand Rounds and Consult Rounds at the BWH were notable for their probing of biological mechanisms; he had a flair for expanding the discourse and possibilities in the diagnosis and therapeutics of challenging cases. He received the Faculty Prize for Excellence in Teaching in 1999 and Harvard Medical School's Class of 2011 Award for Precepting. At the national level, Greene was a member of the first American College of Rheumatology committee to devise guidelines for management of rheumatoid arthritis and for monitoring drug therapy. He was named a fellow of the American College of Rheumatology in 1986 and served as president of the New England Rheumatism Society in 1992. The Jerry Greene Lectureship in Rheumatology at the VA's Medical Grand Rounds was named in his honor.

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Developing the Clinical Research Training Program

In the last decades of the twentieth century, leaders at the Robert Breck Brigham Hospital, as if inspired by the patient-centered philosophy of care espoused by Joel E. Goldthwait and the hospital's other early physicians, started a formal clinical research program. It would employ the expertise of numerous disciplines and craft a program to train the clinical investigators of the future.

Clinical research in the early days of rheumatology

Before the 1970s, the questions posed by clinician scientists in rheumatology, and the problems they were trying to solve, had not yet been named as health services research or clinical epidemiology. Those doing this work did it part-time, and there was little credible peer review of their grants or manuscripts. They lacked funding sources, research training, and an infrastructure, and they had few forums at major scientific meetings and no career path. As a general rule, they did not have a seat at the table with the “grownups” in rheumatology science. The early epidemiologists in rheumatic disease were Philip Wood (1928-2008) in the United Kingdom; Hans Valkenburg in the Netherlands; Erik Allander and Anders Bjelle in Sweden; Dick Wigley in New Zealand; and Alfonse T. Masi, Richard Kazlow, Sidney Cobb (1917-1998), and Larry E. Shulman (1919-2009) in the US. They were the first to examine the burden of rheumatic diseases and to describe their course in observational studies.

In the 1970s and 80s, physicians were starting to be trained in the methodologies underlying contemporary clinical research and began asking serious questions regarding risk factors for rheumatic diseases,

how to measure outcomes, clinical decision making, evaluation of new health technology, health care quality, and health disparities at a population level in the rheumatic diseases. They were deeply influenced by Alvan Feinstein (1925-2001) at Yale, the restive, demanding, provocative physician scientist who coined the term clinical epidemiology. Philip Wood was contextualizing disablement in chronic diseases. Erik Allander challenged the priorities of the Swedish health care system. Halsted Holman, the youngest chief of medicine at Stanford University School of Medicine at the age of 35, was attracting a group of physician activists who had matured in the 1960s. Trained at the Rockefeller Institute and a protégé of the legendary Henry Kunkel (1916-1983), he had first characterized the antinuclear antibody in systemic lupus. Holman was also a silver-tongued orator against nuclear armaments, the Vietnam War, and one of the creators of a new type of medical training, the Robert Wood Johnson (RWJ) Clinical Scholars Program, which was designed to prepare physicians to solve the emerging health care problems of the population and to use the tools from such disciplines as decision analysis, economic analysis, sociology, and anthropology to do so.

During the 1970s, a Clinical Scholar Program at Stanford and the University of California, San Francisco (UCSF), led by Holman and rheumatologist Wallace Epstein at UCSF, was a hotbed of health services, health policy research and what is now known as patient-centered outcomes research. Notables in rheumatology included Jim Fries, Robert Meenan, David Curtis, Dennis McShane, Richard Bertkens, and Matthew Liang; other specialties were also represented. Jim Fries, a graduate of the Hopkins RWJ program and a new Stanford faculty member, created ARAMIS (the Arthritis, Rheumatism, and Aging Medical Information System), a multi-center computerized arthritis database for outcomes research. Fries had also worked with Don Vickery (1944-2008), a Harvard Medical School graduate and medical chief resident at Stanford, on disseminating self-help algorithms developed by the Lincoln Laboratory at the Massachusetts Institute of Technology and a primary care group at Boston's Beth Israel Hospital led by Sheldon Greenfield. These algorithms for common symptoms were used to triage patients at army outpatient facilities to physician-extenders or physicians for

treatment. Robert Pantell, a Boston University- and University of North Carolina-trained pediatrician and RWJ Clinical Scholar, known as “Bullet” to his friends, took the model to pediatric care and his side-kick, John Wasson, to veterans care.

Don Mitchell, a trainee of Walter Bauer at the Massachusetts General Hospital (MGH), was on sabbatical at Stanford and had started the first computerized database and cohort in rheumatoid arthritis in Saskatchewan to track outcomes starting in the 1960s. In residence was also Claire Bombardier, a RWJ Scholar and rheumatologist from McGill, who worked with economist Victor Fuchs at the Bureau of Economic Research. Bombardier organized a study group to study the seminal articles of Alvan Feinstein in the *Journal of Pharmacology and Applied Therapeutics* and introduced the nominal group technique to the group. Harold Goldberg and Stan Shoor, then medical students, Holman, and Kate Lorig, a nurse, worked on the first rheumatology self-help project.

A RWJ Scholar, Howard Waitzkin, trained in sociology and medicine at Harvard and the MGH, was a pioneer in studying health access and patient-doctor communication. Larry C. Horowitz, a Yale Medical School graduate, was a Clinical Scholar while staff director of the US Senate Subcommittee on Health chaired by Massachusetts Senator Edward M. Kennedy, and later became Kennedy’s chief of staff.

The Robert Brigham becomes a multipurpose arthritis center

Against the backdrop of the emergence of clinical research as a discipline, Boston would be the setting for pioneering clinical research focused on rheumatic and musculoskeletal diseases. Austen and Sledge had been leaders in increasing public awareness about the rheumatic and musculoskeletal disorders, attention that led to the 1975 passage of the *National Arthritis Act* (Public Law 93-640) and established the National Commission on Arthritis and Related Musculoskeletal Diseases to study the problem of arthritis in depth and to develop an arthritis plan (Engleman 1977). The Arthritis Act established the position of associate director for arthritis and related musculoskeletal diseases and authorized an Arthritis Interagency Coordinating Committee; community demonstration

project grants; an arthritis data bank; an information clearinghouse; and comprehensive centers for research, diagnosis, treatment, rehabilitation, and education (National Institutes of Health 2010).

Austen was a member of the 18-person National Commission which was to identify shortfalls in care, public education, and investigation related to these conditions, and the preparation of health professionals trained to care for them. In Boston, the Commission worked with leaders in the health care community such as the young, charismatic rising physician leader, H. Richard Nesson (1932-1998), who was to lead the Brigham and Women's Hospital and be architect of the health system, Partners HealthCare; physical therapist Nancy Watts from the MGH; and Sledge. After a year, the commission issued the National Arthritis Plan, which aimed to diminish the physical, economic, and psychosocial effects of arthritis and musculoskeletal diseases, and which laid the groundwork for a national program encompassing research, research training, education, community outreach, patient care, the multipurpose arthritis centers, and a new institute at the National Institutes of Health (NIH).

In 1977, the Robert Brigham and the Massachusetts General Hospital were named one of the first NIH multipurpose arthritis centers. The funding was modest, but it was an auspicious start for the nation's health agenda and became a model for other countries. Although arthritis research would never be as well supported as research efforts aimed at cancer or heart disease, these national actions eventually increased the total pool of resources earmarked for the study and care of arthritis and musculoskeletal diseases and probably stimulated private philanthropy.

As these events unfolded, Austen wanted to build a program that would focus on people in the community with arthritis and musculoskeletal conditions. In his typical methodical approach to solving problems, he consulted leaders in the field who persuaded him to find someone who had the training and experience to build a program and suggested Robert Meenan and Matthew Liang as individuals who might spearhead such an effort. Both Meenan and Liang had trained at Boston City Hospital and were finishing their training in rheumatology and in

the Robert Wood Johnson Clinical Scholars Program. Meenan interviewed at the Robert Brigham but eventually took a position at Boston University.

Liang waited until his friend had made a decision and then took the job crafted by Austen, Nesson, and the chief of medicine at the Peter Bent Brigham Hospital, Eugene Braunwald. Liang was a founding member of Nesson's new Division of Primary Care and General Medicine at the Peter Bent Brigham, and up the hill he built a new NIH Centers program that became known as the Robert B. Brigham Arthritis and Musculoskeletal Diseases Clinical Research Center.

Liang's path to the RBBH had begun on the other side of the globe.

Matthew H. Liang

Matthew Liang lived in Guangzhou, China, until the age of five, his family only two generations removed from the sugar cane and rice-farming village of Jian Lung. His father, Ping Yee Liang, attended the Rockefeller-



A young Matthew Liang, with his father, Dr. Ping Yee Liang, aboard the USS Gordon, en route from China to the United States in 1950

funded Peking Union Medical College. He once was consulted by one of the great families of old China, the Soongs. Liang's mother, Alice Kao, had accompanied a missionary who had suffered a stroke back to Springfield, Massachusetts, and the missionary helped her go to New York University to study nursing. She became head nurse in the newborn nursery at Johns Hopkins Hospital where she met and eventually married Ping Yee, who was there doing postdoctoral work in otolaryngology. They returned to Guangzhou, where Ping Yee Liang started a clinic for eye, ear, nose, and throat diseases.

The family fled China by truck in 1949, traveling to Macau and then Hong Kong. Matthew and his father came by boat to America. His mother and younger brother, Arthur, joined the family a year later in Baltimore. Arthur also became a physician and had a distinguished career in public health, starting the hepatitis B immunization program in Hawaii before moving to the Centers for Disease Control and Prevention, where he led the Preventive Medicine Residency program and was later appointed director of the Food Safety Office.

Matthew Liang went to Baltimore Polytechnic Institute high school, also attended by future colleague, Michael Weinblatt, and studied philosophy and chemistry at Johns Hopkins University. His mother developed Parkinson's disease which left her homebound in her 50s. He spent seven summers working with children and adults with cerebral palsy, polio, muscular dystrophies, and other chronic musculoskeletal disabilities. These life experiences sparked his interests in the public health issues related to chronic disease.

Liang went to Dartmouth Medical School and Harvard Medical School. After residency at the University of Minnesota and a summer with the Grenfell Mission in Newfoundland and Labrador, he attended the Harvard School of Public Health, studying tropical public health and epidemiology. At Boston City Hospital, Charles Davidson (1910 – 2000) encouraged Liang to spend his residency starting a new neighborhood health center in Roxbury, and to work with Roger Mark, a physician, electrical engineer, and benevolent, tough-minded champion for inner city patients. Mark had a profound influence on Liang's approach to population health.

Mark and Liang developed a nursing home telemedicine program, with two nurse practitioners caring for over 400 residents of five nursing homes. In the army, Liang then implemented an algorithm-based physician extender program (automated military outpatient systems specialist, or AMOSIST) which cared for over 30,000 patients a month (Vickery et al. 1975). At Walter Reed Army Medical Center, he organized the training program in general internal medicine and a chronic disease nurse practitioner program, and helped design the computerized hospital information system. After his service, he spent two years at Stanford.

Building a clinical research team

The clinical sciences program was built in the model of the most successful laboratory research programs. Beginning in the basement of the Robert Brigham, where the snow blew through in the winter, the enterprise grew steadily. In its first three years, the program received \$45,000 with the MGH and \$13,000 from the Massachusetts Arthritis Foundation. With a person hired from the typing pool at Brandeis, Mary (Walazek) Scamman, who grew into a highly respected administrator, and one research assistant, they slowly built a group.

Liang's scientific partner, soul-mate, and the associate director of the Center was a lanky, scholarly, guitar-playing health educator, Lawren H. Daltroy (1948-2003). Daltroy's father was a war



Dr. Lawren Daltroy

hero and a scientist at the renowned Bell Labs, his brother a scholar of the Inca civilization at Columbia University. As a European history major at the University of Michigan, Daltroy discovered the acoustic guitar and toyed seriously with being a professional musician; he may have pursued music had not someone suggested public health. Still, he never traveled without lugging his practice guitar.

Daltroy was recruited because the Center was required to get an education expert as a condition of funding. They proceeded to interview dozens of candidates. As luck would have it, Dr. Larry Greene, a distinguished health educator on sabbatical at Harvard, recommended a graduate of his Hopkins program and the search ended. Daltroy came to a job without security and never left, turning down bigger jobs and better salary several times.

In 1994, Daltroy had an ocular melanoma diagnosed and treated by radiation. After eight years, his tumor was felt cured but he had a seizure during a research meeting. It was the first sign that the melanoma had spread to the brain and had bled, possibly from a non-steroidal anti-inflammatory agent which he had taken for neck pain. The neck pain also turned out to be tumor. He died nine months later. He was awarded the Roger Nichols Teaching Prize at the Harvard School of Public Health, and his students had 100 trees planted in his honor. The Lawren H. Daltroy Fellowship in Patient-Clinician Communication from the American College of Rheumatology supports young scientists interested in patient-physician communication. The Lawren H. Daltroy Memorial Fund was established at the University of Michigan School of Public Health, Daltroy's alma mater, by school-mate and friend, Dr. Charles Derrow, to support doctoral students studying provider-patient communication.

The research group included at various times Elizabeth Phillips, a Harvard graduate and future epidemiologist; Martin Larson, a Harvard School of Public Health statistician recruited in a national search; Robert Lew, another statistician who was the son and brother of mathematicians and an ancient history buff; Elizabeth Wright, a nutritionist and programmer; Holly Fossel, a self-taught programmer; Holley Eaton, a community nurse, gerontologist, and Harvard Divinity School graduate; Alison Partridge, a graduate of the Edinburgh School of Speech and Drama and a medical social worker from Scotland who did home visits to tenements in Glasgow and Edinburgh; Charlotte Phillips, an intensive care unit nurse with a master's in public health and a pianist trained at Longy School of Music; Victoria Gall, a physical therapist with a master's degree in education and a future Peace Corps

volunteer in Turkmenistan; and Maura Iversen, a physical therapist who would go on to pursue a doctorate in health education.

The group specialized in “action research” which pursued institutional change while simultaneously developing new methods and insights into mechanisms. For instance, they carried out a randomized trial in Boston home care programs that showed that by using simple, low-cost interventions, homebound patients could achieve their functional goals. Some patients improved dramatically from a bedridden to an independent status even after years of being dependent. Another study, done with the Social Security Administration, evaluated the Social Security disability determination for patients with osteoarthritis, rheumatoid arthritis, and systemic lupus erythematosus to test a more equitable and efficient system that affected over 75,000 subjects with arthritis disability. In a study carried out at a Boston post office, they demonstrated that widely touted safe-lifting programs did not prevent or lessen the severity of back injuries.



Dr. Matthew H. Liang (far left) with staff and fellows from the Robert B. Brigham Arthritis and Musculoskeletal Diseases Clinical Research Center, circa 2001

The group studied Lyme disease's long-term consequences by following a group of Lyme disease patients on Nantucket Island over time. They also identified reasons why people did not practice health behaviors to avoid tick bites. At a time when a new Lyme vaccine was being withdrawn from the market and rates of disease were continuing to climb, they showed that a novel educational intervention – using street entertainers on the ferry boats to Nantucket – could help prevent the disease. In a study that involved some 30,000 ferry passengers, the entertainers attracted children and their families and communicated the dangers of Lyme disease using a rubber arm with actual ticks pasted on with nail polish to demonstrate how to spot the ticks. Passengers were given a shower card to remind them of tick checks, a business card with a Braille dot the actual size of the tick, and a map showing the ticks' habitat on the island.

With Drs. Frank Speizer and Walter Willett, the group identified new risk factors in the cause of rheumatoid arthritis, systemic lupus erythematosus, and other connective tissue diseases. They showed that silicone breast implants did not cause connective tissue or myeloma-like diseases; that oral contraceptives did not prevent rheumatoid arthritis; and that women risked developing lupus from oral contraceptives and post-menopausal hormone replacement therapy. In the Physicians' Health Study, they showed that the antiphospholipid antibody was a risk factor for thromboembolic disease in healthy men.

The group sorted out the effects of lower socioeconomic status and the characteristics associated with it that could be modified in populations with health disparities. They discovered that lower self-confidence in disease management and self-monitoring was linked to poorer health status in patients with lupus, and then conducted a clinical trial showing that an intervention targeted to increase self-confidence could positively affect a patient's quality of life.

The first rheumatology fellow who worked with the group was Robert Hartley. Hartley, a graduate of Harvard College and Harvard Medical School, was an outstanding member of the medical house staff at the Peter Bent Brigham Hospital before training in rheumatology. He studied the potential impact of diagnosis-related groups (DRGs) on

rheumatology and evaluated the then new technology, image magnification in radiology.

In 1981, the Center accepted its first formal trainee, Rowland “Bing” Chang, and in doing so began the training program for clinician scientists. Chang, a first generation Asian American from the Midwest, was a student at Harvard when he met and married a young pianist, Deborah Sobol, from Smith College. At Tufts Medical School, he heard Raymond Partridge, a transplanted rheumatologist from Edinburgh, discuss a rheumatic disease case. Chang was moved by the holistic approach to dealing with its functional consequences and decided to go into rheumatology. The rehabilitation model directed towards maintaining and improving function in the face of physical impairments influenced Chang’s entire approach to rheumatic disease.

Chang subsequently arranged a one-of-a-kind kind rotation at the Robert Brigham while training in medicine at the Mount Auburn Hospital, before spending a year with Graham Hughes at London’s Hammersmith Hospital and completing a fellowship at the Robert Brigham. Nearing completion of his training, he studied at the Harvard School of Public Health, and the approaches he learned there set the trajectory of his professional life. A paper authored with Harvey Fineberg, future Dean of the Harvard School of Public Health, Provost of Harvard University, and President of the Institute of Medicine, was a much-quoted study (Chang and Fineberg 1983). The article employed decision analysis, an analytical tool that Liang had used in the study of clinical decision making in rheumatic diseases. Chang became a leader in rheumatology and rehabilitation along with Lynn Gerber, George Ehrlich, and Robert Swezey and was the Director of the Northwestern Master of Public Health Program, which focused on enabling medical students and health professionals to be effective “boundary-spanners” between medicine and public health, something for which its director was the quintessential model.

By 2006, the Center’s trainees from seven countries included Hartley, Chang, Celeste Robb-Nicholson, Neal Roberts, John Wade, Steven Stern, Jeffrey N. Katz, Mauricio Hernandez-Avila, Carolyn Schwartz, Katherine Swan Ginsburg, Paul Fortin, Jodi Grosflam, Nancy Shadick,

Jorge Sanchez-Guerrero, Elizabeth Karlson, Oliver Sangha, Gerold Stucki, Charles Rivest, Louis Bessette, Maura Iversen, Hideki Hashimoto, Gillian Barclay, Nizar Mohamed, Daniel Solomon, Elizabeth Brooks, Liz Lingard, Richard Bell, Sang-Cheol Bae, Michael Corzillius, Lisa Mandl, Larissa Roux, Robert Ellison, Karen Costenbader, Elaine Husni, Heike Bischoff-Ferrari, Axel Finckh, Juliet Brause, Elizabeth Benito-Garcia, Paolo de Pablo, and Julia Fridman Simard. Members of the trainee group were recipients of the 2006, 2007, and 2011 American College of Rheumatology Henry Kunkel Young Investigator Awards; the Edward Dubois Award in 1988 and in 2001; Outstanding Clinical Scientist (Canada); Outstanding Young Investigator (American Bone and Mineral Society); Outstanding Young Investigator (American Nutrition Society); the 2006 Pfizer Prize; the 2007 Freedom of Movement Award; the 2008 Distinguished Clinical Scientist award from the Asia Pacific League of Associations for Rheumatology (APLAR); the Jean and Linette Warnery Prize; the Hirzel-Callegari Prize; the Lupus Foundation of America 2009 Mary Betty Stevens Young Investigator Prize; the 2009 Dutch State Mines Nutrition Award; and the 2011 Distinguished Scholar Award from the Association of Rheumatology Health Professionals, among others.

The style of the Center borrowed heavily on the laboratory science programs around it. At its core were independent scientific generalists from different disciplines who mastered the art of collaboration. The biometry core provided common support in computer sciences, questionnaire design, and biostatistics, and recruited through national searches the very first full-time statisticians to rheumatic disease research – Martin Larson, Robert Lew, and Jenny Jie Huang. Its training philosophy combined theory with practice and had fellows attend the Harvard School of Public Health's Clinical Effectiveness Program to learn the techniques important in studying and solving clinical and public health problems. The fellows would also conduct mentored research at the same time, thus ensuring the appropriate application of what they learned in the classroom. At the heart of the Center was a weekly seminar in which people left their egos at the door to critique and improve each other's work. When Dr. Lawrence E. Shulman, the first Director of the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), who had presided over the evolution of the multipurpose arthritis cen-

ters program, was asked by NIH Director Harold Varmus to visit academic centers with clinical research training tracks and reap the best elements for its new funding initiatives in clinical research, the Robert Brigham Center was one of its models (Shulman 1996).

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The Legacy of the Robert Breck Brigham Hospital

Almost a century after the opening of the Robert Breck Brigham Hospital, parts of Mission Hill are much the same. Three-decker houses line the crowded streets; children play on the sidewalks as they once did in the hill's pastures. Atop the hill, the façade of the "Robert" remains unchanged, although the name has been removed because the building is now part of the New England Baptist Hospital. The graceful lobby is now a clinic waiting area. Traces of the past remain: the bridges where patients once played cards are untouched; the view of the back of the hill overlooking the Boston skyline is as grand as ever. But the heyday of the building and the era it represented in American health care is over.

Down the hill, the legacy of the Robert Breck Brigham Hospital lives on in the Division of Rheumatology, Immunology, and Allergy and the Department of Orthopedic Surgery at the Brigham and Women's Hospital (BWH) – an institution at the forefront of American health care. That legacy includes a leading role in the study of the fundamental molecular mechanisms of the systemic rheumatic diseases, without which today's treatments would not be possible. It includes pioneering work in joint implant design that led to today's highly successful joint replacement surgery, and the establishment and flowering of numerous specialty fields, including rheumatology, orthopedics, bone and joint radiology, and rehabilitation for people with arthritis and musculoskeletal diseases. The hospital's work gave rise to evidence-based medicine for these diseases, and its staff became leaders in medicine, surgery, nursing, rehabilitation, and the basic and clinical sciences. All of this innovation

and leadership was set in motion at this small hospital by a staff and faculty that embraced a mission to provide kind, humane care to people with “incurable” diseases – diseases that others found hopeless and uninteresting. They labored in a hospital that struggled for most of its 66 years to stay open and to be adequately staffed and financially solvent.

Under Austen and Sledge, and their successors, Michael Brenner and Tom Thornhill, the research, technological capacity, teaching programs, and organizational resources of the hospital have grown and its reputation has been assured. These developments have been coupled with creative new ways of caring for chronic disease patients whose difficulties call for the same patience, kindness, and compassion today as they did in 1914. Through the BWH training programs, the legacy of the RBBH continues on both the national and international scene as past and present trainees continue to strive for excellence in patient care and discovery-oriented and problem-solving research, and as they take leadership positions in patient care and science.

The research at the hospital has grown exponentially in size, research support, and renown. In 1978 – two years before the BWH opened – there were 35 full-time and five part-time faculty in the Division of Rheumatology, Immunology, and Allergy, and \$2.2 million in federal and non-federal grants. By 1989, 50 full-time, six part-time, and two affiliate faculty participated in its activities. The number of fellows in rheumatology and immunology increased from five in 1966 to 38 in 1987, and grant support grew to \$6.1 million. By 1991, the research space totaled almost 40,000 square feet – a huge increase over the 10,000 square feet at the RBBH in 1966.

Changes at the BWH mirrored those that occurred in the broader US health care system in the closing decades of the twentieth century and the beginning of the twenty-first, when the system underwent a sea change of increasing technological capacity (combined with a public hungry for its possibilities), increasing costs, and, unfortunately, an increasing number of people uninsured for health care (Newhouse 1993, Starr 1982). Teaching hospitals continually evolved to meet these challenges. In 1994, BWH, under the leadership of John MacArthur, dean of the Harvard Business School and chairperson of the BWH board, and

H. Richard Nesson, president of the BWH, joined with the Massachusetts General Hospital to form Partners HealthCare to protect the traditional missions of academic excellence and patient care, and to increase each organization's ability to negotiate successfully with vendors and capitated health plans in the face of financial pressure. The creation of Partners launched an unprecedented expansion into communities and new affiliations with smaller hospitals, physician practices, and specialty hospitals in an increasingly broad service area.

Within this broad context, BWH clinicians and scientists continue the legacy of their forbears at the old Robert by providing cutting-edge, compassionate care to people with arthritis and other rheumatologic conditions. Patients now have a very different prognosis than did their counterparts at the turn of the last century. Powerful new medications, including biologics with specific molecular targets, can halt the diseases rather than just treat their symptoms. The dedication to unraveling the fundamental mechanisms of disease espoused by the leaders at the Robert Brigham was part of the groundwork that opened up therapeutic discoveries. The first truly effective treatment for rheumatoid ar-



Ann Coady, longtime switchboard operator at the Robert Breck Brigham

thritis, psoriatic arthritis, and the spondyloarthropathies – an antibody to tumor necrosis factor – was developed by Marc Feldmann and Sir Ravinder Maini of Imperial College in London, but built on the work of investigators who pursued the basic mechanisms of disease at the Robert Brigham and many others including Lloyd Old of the Memorial Sloan-Kettering Cancer Center and Anthony Cerami of Rockefeller University. Once, patients with uncontrolled synovitis and end-stage joint disease faced a future in a wheelchair or bed; now, reconstructive surgery is available. These operations came of age and were refined and improved by the orthopedic pioneers and their trainees at the Robert Brigham.

Still, people who worked or received care at the Robert lament, “I miss the old place.” It is a feeling not captured in the enumeration of the staff’s achievements, publications, or “firsts.” Few who worked there did not have a story to tell about what it was like or about the “characters” who helped give the place its charm.

There was George English of security who parked the vehicles of those who came for care. Or Ann Coady, the switchboard operator



“We had a switchboard operator who was the most non-mechanical person...but she was nice...If there was an outside call, she probably got all the plugs mixed up, but she’d say, ‘Oh, I just saw him walking down to the cafeteria, why don’t I call down there?’ So she always knew where everyone was. No one ever called anyone on the phone. Everything was word of mouth. The phones were almost never used.”

The Robert Breck Brigham Oral
History Project

who might have been flustered by the technology but always knew where people were in the hospital. Or the many Irish nurses, with their distinctive brogue, who provided such exemplary, nurturing care.

The tiny cramped cafeteria was a gathering place for the entire staff, where the rank and file routinely dined and conversed with the hospital leadership, and the clinicians exchanged information or got “curb-side” consults, all the while enjoying the creations of a highly-regarded chef, which attracted people off the street in the Mission Hill neighborhood. A woman who made and repaired curtains for the hospital might be seen alongside Boston

policemen, traveling salesmen, or the mailman. The fish chowder was an especially alluring draw. Orange juice, two scrambled eggs, bacon, toast and coffee could be had for 69 cents. The cooks knew exactly how the surgeons liked their eggs. Everybody got their business and consultations done in person and the young were mentored by the experienced. Life issues, the Boston Red Sox, expansive ideas, science, art, history – conversations on these and many more topics were all part of the nourishment.

The story of the Robert Brigham tells a great deal about what is possible in modern hospitals. In learning about its past, one reaffirms the old adage, “there is little new under the sun except arrangement.” We see that laments over the increasing costs of care, and the impersonality and bureaucratization of the health care system, have been extant for over three-quarters of a century. We see that viewing patients in a social context was conceptualized long ago. “New” health care innovations such as unit dose medication dispensing, maximizing efficiency, primary nursing, community outreach and aftercare, and the “team approach” have long roots. So too does the appreciation that social and economic factors influence the care of patients and their outcomes. All the current dilemmas of American health care – spiraling costs, rising expectations, lack of reimbursement, nursing shortages, and health disparities were faced by the early pioneers in rheumatic and musculoskeletal health care and were solved gallantly in their time.

The Robert Brigham history is also one about how a hospital workplace can provide an identity, personal meaning, and community for physicians, nurses, therapists, and other staff. This is a meaning that goes beyond the official mission that may be anointed by marketing or public relations. The Robert was special in part because of its size and because its leaders had vision, high expectations, and a philosophy of teamwork. Its rituals – such as teaching rounds and Dr. Hall’s Seminar – became the vehicles that would instruct generations of young physicians in the critical appraisal of medicine long before evidence-based medicine became a trend. Traditions such as “At Home” brought the entire community together, thanks to the vision and largesse of women of the RBBH Associates.

Small specialty hospitals like the Robert Brigham disappeared from the American health care scene until recently, when the re-emergence of physician-owned specialty hospitals for high-volume, well-reimbursed surgical procedures aroused national debate. Today, specialty hospitals are often framed as an economic issue, sometimes seen as a threat that could destabilize an already beleaguered, unaffordable health care system. But for the doctors and the patients who were there at the old Robert Brigham, it was not the economics of health care that motivated their work. In fact, the hospital fought to survive financially for much of its history. It was more about how best to care for a large group of disabling disorders. The small specialty hospital was intimate, coordinated, kind, and a test ground for medical and surgical innovation. It was a setting where patients and their families learned from one another and informed their care providers; where patients came first, stayed as long as they needed, and went to the operating room when the surgeon felt it was time; where the expertise came to the patients, and everyone knew their names.

The legacy of the research enterprise built by Austen and Sledge, an enterprise built on the foundation laid by Goldthwait, Bayles, Stillman and others, cannot be easily estimated. It fueled the discoveries that have improved the outcomes for persons with arthritis in a way that neither the hopelessly “crippled” patients that first entered the hospital nor their caregivers could have foreseen. These contributions – in-



The legacy of the research enterprise built by Austen and Sledge...fueled the discoveries that have improved the outcomes for persons with arthritis in a way that neither the hopelessly “crippled” patients that first entered the hospital nor their caregivers could have foreseen.

cremental steps in the elucidation of basic mechanisms of disease, improvement of prosthetic designs, risk factor identification, prevention of disease, and prevention of adverse outcomes – span the entire continuum of discovery from the laboratory to the bedside to the population at risk and the population affected by disease (now termed translational research) (Liang 2003). The achievements in basic humoral and cellular immunology, the description of clinical syndromes and sub-

sets in rheumatology, allergy, orthopedics, epidemiology, health services research, and outcomes research demonstrate the genealogy of ideas through time (LaCombe 2001) and, as one notable graduate, Neal Roberts, put it: “the reach through time and intellectual geography of the critical mass that was and is the Robert Brigham legacy” (Roberts, personal communication).

Not long after its inception, the staff at the Robert Brigham embraced a new vision that saw the hospital not merely as a warehouse for incurables, but one where chronic illness could be actively treated and controlled. Its physicians, nearly all with military experience, had a *cando* attitude that rejected the notion of incurable or that one could ever know enough. They exemplified the tough-minded resolve articulated by Frank Austen: “Do the best you can.”

As one observer, Malcolm Rogers, noted, the legacy of the Robert Brigham may have been intimately tied to its scale and the fact that its programs formed naturally and organically rather than by decree (Rogers, personal communication). In the small Robert Brigham, the way of doing things was literally and figuratively horizontal rather than vertical, in contrast to the many-storied contemporary hospital buildings (Stoller 1988). In the years that followed, health centers increasingly developed centers of excellence, which brought together the varied disciplines around specific clinical problems – rediscovering a model of care pioneered at the Robert Brigham.

The Robert Breck Brigham Hospital brought together diverse people who, when faced with so-called “incurable” disease, endeavored to both ease the suffering of those afflicted and to learn more about what could be done to help. They made the basic and applied discoveries that enabled them, with each succeeding generation, to offer patients more effective treatment than those who had come before. As we gathered the stories of the individuals at the hospital in this book, a pattern emerged of a “perfect storm” that made the Robert so unique: an idealistic mission that converged with the hopeful aspirations of the sons and daughters of immigrants, along with veterans returning from the Great War, who – in their 20s and 30s, and often in their first real jobs – didn’t know that rheumatologic and musculoskeletal conditions were “incur-

able,” nor did they appreciate how little was really known about the disorders. They recruited other untried, bright young people to their vision, exhorted them to make the best of the situation, and in doing so, changed the entire philosophy of how these conditions were managed while discovering the new knowledge to do better. In the last analysis, this pervasive can-do attitude and resolve may have been The Robert Breck Brigham’s most lasting achievement. It continues today and seems a story worth telling and remembering.

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APPENDIX A – SELECT AWARDS AND DISTINCTIONS FROM THE ROBERT BRIGHAM LEGACY

AMERICAN COLLEGE OF RHEUMATOLOGY

Presidents, American College of Rheumatology (and precursor organizations)

1941	Loring Swaim
1971	J. Sydney Stillman
1994	Shaun Ruddy
2000	Michael E. Weinblatt

Distinguished Clinical Investigator Award

2002	Matthew H. Liang
2008	Michael E. Weinblatt
2013	Jeffrey N. Katz

Distinguished Basic Investigator Award

1993	K. Frank Austen
2003	David N. Glass
2006	Laurie H. Glimcher

Henry Kunkel Young Investigator Award

1989	Laurie H. Glimcher
2000	Jeffrey N. Katz
2002	I-Cheng Ho
2006	Elizabeth W. Karlson
2007	Daniel H. Solomon
2008	David M. Lee
2011	Karen H. Costenbader

Distinguished Fellowship Program Director Award

2012	Ronald J. Anderson
------	--------------------

Masters of the American College of Rheumatology

Ronald J. Anderson
K. Frank Austen
David N. Glass
Matthew H. Liang
Shaun Ruddy
Peter H. Schur
Clement B. Sledge
J. Sydney Stillman

ASSOCIATION OF RHEUMATOLOGY HEALTH PROFESSIONALS

President's Award

2006	Maura D. Iversen
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Master Clinician Award

2003	Marie Weafer Hodgins
2011	Victoria Gall

Lifetime Achievement Award

1996	Alison J. Partridge
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Distinguished Scholar Award

1991	Lawren H. Daltroy
2011	Maura D. Iversen

Addie Thomas Service Award

1987	Victoria Gall
1990	Alison J. Partridge
2006	Maura D. Iversen

LUPUS FOUNDATION OF AMERICA

President's Award

1987	Peter H. Schur
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Mary Betty Stevens Young Investigator Award

2009	Karen H. Costenbader
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Henrietta Aladjem Achievement Award

1995	Malcolm Rogers
1996	Peter H. Schur
2005	Patricia A. Fraser

Hall of Fame

1986	Malcolm Rogers
1990	Peter H. Schur

**AMERICAN ACADEMY OF
ORTHOPEDIC SURGERY/
ORTHOPAEDIC RESEARCH
SOCIETY**

The ORS Alfred R. Shands Jr., MD Award

1995 Clement B. Sledge

OTHER AWARDS

**Lee C. Howley Sr. Prize for Arthritis
Research**

[National Arthritis Foundation]

1991 Douglas T. Fearon

1994 K. Frank Austen

1996 Michael B. Brenner

1996 Laurie H. Glimcher

1998 Matthew H. Liang

James H. Fairclough, Jr. Memorial Award

[Massachusetts Chapter of the Arthritis
Foundation]

1982 Virginia McCann

1987 Alison & Raymond Partridge

1990 Jean Jackson

1996 Matthew H. Liang

1999 Maura D. Iversen

2000 Richard D. Scott

2001 Michael E. Weinblatt

2005 Ronald J. Anderson

2006 Thomas S. Thornhill

2009 Jonathan S. Coblyn

**Marian Ropes Physician Achievement
Award for Excellence in Arthritis Care
and Leadership**

[Massachusetts Chapter of the Arthritis
Foundation]

1995 Edward Nalebuff

1998 Richard Scott

1999 Clement B. Sledge

2000 K. Frank Austen

2003 Ronald J. Anderson

2004 Thomas S. Thornhill

2005 Jean Jackson

2007 Jonathan S. Coblyn

2008 Barry Simmons

2009 Michael E. Weinblatt

2012 Gregory Brick

2013 Arthur Boland

2013 Matthew H. Liang

APPENDIX B –TRAINEES IN RHEUMATOLOGY, IMMUNOLOGY, AND ALLERGY*

Shaun Ruddy	1966-1968	Stephen Wasserman	1972-1974
Martin Valentine	1966-1968	Douglas T. Fearon	1972-1975
Robert P. Orange	1966-1969	Louis Simchowitz	1972-1975
Orlando L. Meyers	1967-1968	Jeffrey Drazen	1973-1974
Mamoru Shoji	1967-1968	Robert Lewis	1973-1974
Richard Talamo	1967-1968	Jerry C. Daniels	1973-1975
Ronald Anderson	1967-1969	David Gibson	1973-1975
Melvin C. Britton	1967-1969	Melvin E. Medof	1973-1975
Stephen I. Rosenfeld	1967-1969	Willy Piessens	1973-1975
David C. Bishop	1968-1968	Arthur Sober	1973-1975
Eugenia Hawrylko	1968-1969	R. Wesley Leid	1973-1976
Edmund J. Lewis	1968-1970	Anne Nicholson	1973-1977
Daniel J. Stechschulte	1968-1970	Lawrence Kater	1974-1975
Heinz Remold	1968-1971	Bruce Littman	1974-1975
Ross Rocklin	1968-1971	Robert T. Osteen	1974-1975
Alejandro E. Franco	1969-1970	Mohamed Daha	1974-1976
Winthrop Hallowel	1969-1970	David N. Glass	1974-1976
Steven Rosenberg	1969-1970	Nigel Paterson	1974-1976
Lawrence Schainker	1969-1970	Onesmo ole-MoiYoi	1974-1977
Elliot Alpert	1969-1971	Gerald Schoepflin	1974-1977
Motoharu Kondo	1969-1971	Roger Yurt	1974-1977
Richard S. Panush	1969-1971	Diana Post	1975-1976
Edward Spitz	1969-1971	R. Neal Boswell	1975-1977
Nicholas Bianco	1969-1972	William Docken	1975-1977
Allen Kaplan	1969-1972	Gary Kammer	1975-1977
Jocelyn Spragg	1969-1972	Donald Raum	1975-1977
Jacques Caldwell	1969-1973	John M. Weiler	1975-1977
A. Barry Kay	1970-1970	David M. Center	1975-1978
John A. Coyne	1970-1972	Dirk Greineder	1975-1978
Jean M. Jackson	1970-1972	Louis Heck	1975-1978
Jacques Leibowitch	1970-1972	Marek Rola-Pleszczynski	1975-1978
John Goldman	1970-1973	Richard Schubert	1975-1978
Michael Kaliner	1970-1973	Alice Kühner	1976-1977
Larry G. Anderson	1971-1972	Robert Lewis	1976-1977
Edward J. Goetzl	1971-1972	Richard Brodman	1976-1978
Larry G. Hunsicker	1971-1972	Urs Nydegger	1976-1978
Christopher Spry	1971-1972	Somesh Sharma	1976-1978
Bruce U. Wintroub	1971-1972	David Trentham	1976-1978
Richard I. Rynes	1971-1973	Matthew Vadas	1976-1978
Alan D. Schreiber	1971-1973	Joseph J. Burge	1976-1979
Nicholas A. Soter	1971-1973	Joyce Czop	1976-1979
Carolyn Bell	1972-1973	David Liu	1976-1979
Samuel Shacks	1972-1973	Bernd Binder	1977-1978
Hyman Tannenbaum	1972-1974	Daniel Bout	1977-1978

Stuart Mushlin	1977-1978	Diane McMahon-Pratt	1978-1981
Alfred I. Tauber	1977-1978	Robert Schoen	1978-1981
Deborah Cameron	1977-1979	Alain Dessein	1979-1980
Jonathan Coblyn	1977-1979	Marita Troye	1979-1980
Patricia Fraser	1977-1979	Kenneth Wi-K Watt	1979-1980
Michel Kazatchkine	1977-1979	Francis Moore Jr.	1979-1981
Marcia Silver	1977-1979	Richard L. Stevens	1979-1981
John A. Smith	1977-1979	Marcia Tonnesen	1979-1981
Frank H. Valone	1977-1979	Daniel Goldman	1979-1982
Peter F. Weller	1977-1979	James G. Wilson	1979-1982
Stephanie James	1977-1980	Christine Winslow	1979-1982
Dean D. Metcalfe	1977-1980	Peter David	1980-1981
Gina Moser	1977-1980	David E. Phillips	1980-1981
Volker Klimetzek	1978-1979	Sarah Anderson	1980-1982
Lawrence Schwartz	1978-1979	Manuel Canlas	1980-1982
Donald Denney	1978-1980	Jerry Greene	1980-1982
Stephen Holgate	1978-1980	Manfred Maier	1980-1982
Isao Kaneko	1978-1980	Roy J. Soberman	1980-1982
Janis K. Lazdins	1978-1980	Dale Abrahamson	1980-1983
William Lloyd	1978-1980	Donald Harn	1980-1983
Christine Shapleigh	1978-1980	Chong W. Lee	1980-1983
Michael Weinblatt	1978-1980	Henrique Lenzi	1980-1984
Susan Hoch	1978-1981	W. Neal Roberts	1980-1986
William McCune	1978-1981		

*Please note: We include individuals who began their training at the Robert Brigham in the years up to and including 1980, the time of the merger that created the Brigham and Women's Hospital. Even so, we expect this list is incomplete, and we apologize for any omissions. A complete list of trainees in surgery was not available.

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About the author

Matthew H. Liang, MD, MPH, FACP, FACR, was the founder and director of the Robert B. Brigham Arthritis and Musculoskeletal Diseases Clinical Research Center from 1980 to 2003, one of the models for the National Institutes of Health's strategy to build and strengthen patient-oriented research in the United States. He and his colleagues have made important contributions in identifying new modifiable risk factors in systemic lupus erythematosus and rheumatoid ar-

thritis; improving doctor-patient communication; improving patients' function and quality of life; preventing tick-borne illnesses; advancing clinical trials methodology in autoimmune diseases; and curbing health disparities. In 2010, The Matthew H. Liang Distinguished Chair in Arthritis and Population Health was endowed in his honor.



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